Inquiry@Queen's

7th Annual Undergraduate Research Conference

Program

March 7 & 8, 2013
Queen's Learning Commons

Stauffer Library

iatq.ca

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March 2013

We are very proud that we have reached the 7th year of celebrating the discoveries of a new generation of scholars at the Annual Inquiry@Queen's Undergraduate Research Conference. We have two full days to share, discuss, think, learn and feel excited about the research of our undergraduate students. The work they will present comes from many avenues - course work, theses, design projects and summer research opportunities; some came simply from an interest in a topic, and a desire to know more and think more.

Inquiry@Queen's is more than a conference; it is an approach to learning where the teacher and the learner reside in the same person. It is a natural extension of a university that prides itself on the quality of undergraduate education and its scholarship and research.

We invite you to attend the oral presentations, to view the posters and talk to the presenters, to ask questions, to attend the opening ceremonies and the special events, but most certainly to enjoy the breadth of undergraduate student scholarship. Drop by for an hour, an afternoon, a day or two days!

We thank all those who have supported us over the past seven years. Congratulations to all participants!

On behalf of the Inquiry@Queen's Steering Committee,

Co-Chair, Jackie Druery
Acting Head, Academic Services
Queen's University Library

Co-Chair, Vicki Remenda
Queen's Chair in Teaching and Learning, 2006-09
and Geological Sciences and Geological Engineering

Co-Coordinator, Nathalie Soini
Acting Head, Learning & Research Services
Coordinator, QLC
Queen's University Library

Co-Coordinator, Patrick Patterson
QLC Assistant
Queen's University Library

CONFERENCE AGENDA

All sessions to be held in Speaker's Corner, Queen's Learning Commons, Stauffer Library unless otherwise indicated

Thursday, March 7, 2013

9:15	Coffee
9:30	Session I: Contamination to Cleanup
9:30	Session II: Decoding (Science) (Room 121, Stauffer Library)
11:30	**What you need to know about graduate school, All welcome**
12:45	Session III: Influences on Perception
12:45	Session IV: Mood, Memory & Mind (Room 121, Stauffer Library)
2:30	Break
2:45	Session V: Disambiguation
2:45	Session VI: Research Informing Policy (Room 121, Stauffer Library)

Friday, March 8, 2013

8:45	Coffee
9:00	Session VII: Kid's Health
9:00	Session VIII: Decoding Hegemony (Room 121, Stauffer Library)
10:30	**KEYNOTE *Skull lady, rat girl, brain man: Superheroes of inquiry!*** Nancy Suzanne Ossenberg, Professor Emeritus, Department of Biomedical & Molecular Sciences, *Morphological Traits of the Skull* Doris Li, '14, Life Sciences, *How Rat Battles Taught me Science* Douglas Munoz, Professor of Physiology, Psychology and Medicine; Director; Queen's Centre for Neuroscience Studies, and Canada Research Chair in Neuroscience
11:30	**Session XIII: Pizza and Posters: Lunch with the Poster Presenters** (Room 121, Stauffer Library), **All Welcome**
12:30	Session IX: Eco-control on Change and Difference I
1:00	Session X: Leadership & Motivation (Room 121, Stauffer Library)
2:45	Session XI: Words and Language
3:15	Session XII: Eco-control on Change and Difference II (Room 121, Stauffer Library)

ORAL PRESENTATIONS

Session I: Contamination to Cleanup

Speaker's Corner, Queen's Learning Commons, Stauffer Library
Thursday, March 7, 9:30-11:15
Moderator: **TBA**

Is Heavy Fuel Oil Toxic to Fish?

Presenter: Keenan Munno, Biology
Faculty Supporter: Dr. Peter V. Hodson, Environmental Studies

Heavy Fuel Oil (HFO) is used as fuel on large ships, and is the product remaining after refining crude oil. Because HFO has equal or greater density than crude oil, it can sink and interact with species that are not normally exposed to oil when spilled, having potentially drastic ecosystem effects. The animals at risk include fish, such as rainbow trout (*Oncorhynchus mykiss*), using gravel spawning shoals. This study was undertaken to determine the chemical composition and toxicity of HFO 7102 sub-fractions. Previous work in this study involved chemically separating HFO 7102 into fractions F_2-F_4 and testing the toxicity of each fraction with rainbow trout bioassays in a process known as Effects-Driven Chemical Fractionation. The most toxic fraction (F_3) was separated into fractions F_3-1 and F_3-2, and bioassayed using rainbow trout. As F_3-1 proved more toxic, it was selected for chemical separation. As part of this ongoing project, my research involves rainbow trout bioassays using acute and chronic exposure times to assess relative toxicities of fractions F_3-1-1 to F_3-1-4. Chemical analysis will identify the compounds in each fraction to determine which ones are included in the most toxic fraction. It is predicted that F_3-1-2 will be most toxic because it has the highest total polycyclic aromatic hydrocarbon (PAH) content, which are compounds known to induce toxicity. An improved understanding of the compounds in HFO responsible for toxicity will provide useful information in predicting risk associated with using HFO 7102 and potential ecosystem implications in the event of an oil spill.

The Effect of Synthetic Estrogens on Fathead Minnow Populations

Presenters: Shannon Brent, Biology; Reem Abaza; Walid Aoude; Rebecca Arcieri; Olivia Bruce
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

The fathead minnow (*Pimephales promelas*) is a freshwater fish with a wide distribution in lakes, streams, and ponds across North America, including Ontario. This species has been recognized as one of the most useful model organisms for freshwater toxicology monitoring, due to its tolerance of its range for aquatic conditions. Synthetic estrogens are excreted as a metabolic product in the urinary waste of women using oral contraceptives. Estrogens are not effectively filtered out by sewage treatment plants and are subsequently released into water effluents, affecting aquatic wildlife. In response to experimentally heightened estrogen concentrations, male and female fathead minnows have shown increases in vitellogenin protein, and females have displayed delayed ovarian development and increased numbers of underdeveloped ovarian follicles. Males also experienced lowered gonadosmatic indices, and some males had primary stage oocytes in their testes. As would be expected, synthetic estrogen additions influenced fathead minnow reproductive success, leading to a collapse of the experimental fish population. By taking a multi-disciplinary approach, this study looks to identify how synthetic estrogens are threatening local fish populations, and how this may eventually disrupt the freshwater food chain. Collaboration with The Canadian Association on Water Quality (Kingston), Ravensview Wastewater Treatment Plant, and the Catarqui Region Conservation Authority will provide a greater understanding of the hormonal content in Kingston's wastewaters. Ultimately, this study will provide more insight on the level of risk

faced by freshwater fish populations on a local scale, and propose a method to reduce estrogen deposition in freshwater environments.

QGEM 2012: Building a Chimeric Flagellar Scaffold for Enhanced Bioremediation and Biosynthesis

Presenters: Beini Wang, Kevin Chen, Queen's Genetically Engineered Machine (QGEM) Team

Synthetic biology is a rapidly expanding field that involves designing biological systems and operating them in living cells. The Queen's Genetically Engineered Machine (QGEM) team competes annually at the International Genetically Engineered Machine (iGEM) competition, which challenges students around the globe to use synthetic biology to solve real-world problems. Last year, the QGEM team sought to improve the efficiency of bioremediation and biosynthesis by modifying the flagella of E. coli. Flagella are whip-like appendages that many organisms and cells use for locomotion. One flagellum is composed of 20 000 self-assembling protein subunits called flagellin, which can be divided into two parts. One part is necessary to form the flagellum polymer, and the second part is an auxiliary domain with no particular function. This domain can be replaced with functional proteins, such as metal-binding proteins for bioremediation or useful enzymes for biosynthesis. With the incorporation of proteins for binding, adhesion, degradation, and synthesis, normal flagella can be transformed into functional appendages that can be useful in many applications. As an additional component of their project, the QGEM team developed dance as a new means of teaching and explaining science, and incorporated it into their presentation at the iGEM competition.

National and Provincial Profiles of Chemical Releases by Canadian Industrial Sectors, 2002-2010

Presenter: Savita Rani, Biomedical and Molecular Sciences, Life Sciences
Faculty Supporter: Dr. Alvaro Osornio-Vargas, Medicine (University of Alberta)

The National Pollutant Release Inventory (NPRI) is a public-domain record of chemicals released into air, water and land by Canadian facilities from various industrial sectors. The aim of this study was to use historical NPRI data (2002-10) to build national and provincial profiles showing amount, identity and health-hazard classification of chemicals released by facilities in different sectors. Nationally, it was found that 97% of total chemical releases were released into air, and that the top 3 chemical-emitting sectors – Manufacturing (MAN), Mining (MIN) and Utilities (U) – accounted for 98% of these air emissions. Statistical analysis was used to compare provincial chemical releases in the above 3 sectors. Testing showed that significant variation exists in the activity level of the national top 3 sectors within each province. This is reflected in the finding that provincial top 3 sectors do not necessarily match the national profile. Next, health-hazard classifications were determined for the 10 highest-emitted chemicals in the provincial and national top 3 sectors. In the national profile, MAN was classified as carcinogenic, neurotoxic, respiratory-toxic; MIN as reproductive-toxic, respiratory-toxic; U as respiratory-toxic. Sector-hazard relationships in the provinces differed from the national trends and from each other. Ultimately, associating sectors with particular hazards may help link the nature of regional health outcomes to the hazard type of local industrial facilities. A next step would be to account for differing toxicity levels among chemicals of the same hazard type by normalizing the data with risk scores that take into account a chemical's specific toxicity.

It's Of(fish)cial: Pulp Mill Effluent Can Alter Reproductive Cycles of Ontario Fish

Presenters: Julie Hovey, Biology; Robert Fillier; Christopher Heysel; Laura Lintott; Andrew Lue
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

Pulp and paper mills are of economic importance in Canada, however their effluent waste is being channeled into water bodies and causing a variety of negative effects in aquatic ecosystems. Pulp mill effluents are chemical compounds which are oxygen consuming, persistent, and toxic, and have the capacity to mimic physiological compounds. A review of current literature on pulp mill effluent reveals that these chemicals can mimic the reproductive hormones of fish, thereby having effects on local fish reproductive cycles. These reproductive alterations include decreased steroidogenesis, reduced gonad size, and altered expression of secondary sex characteristics that together can affect the health of wild fish populations. However, there has been considerable variation found in the effects of pulp mill effluent based on chemical composition of the pollutants, and the sex, species, and exposure duration of the affected fish. Biotreatment has been considered as a viable option for reducing the impact of effluent on fish reproduction. We suggest that alterations in reproductive cycles can have downstream effects through trophic cascades which in turn may have widespread effects on community structure. Future research should include analysis of long term consequences on multiple species in affected ecosystems, as well as further study on the use of biotreatment to reduce the impact of effluent.

Session II: Decoding (Science)

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Thursday, March 7, 9:30-11:15
Moderator: TBA

Characterization of a Novel MicroRNA from the T-DNA Locus of *Rosewood*, an Activation-Tagged Poplar Tree

Presenter: Curtis Boswell, Biology
Faculty Supporter: Dr. Sharon Regan, Biology

Plant phenomics refers to using the phenotype of mutants to identify genes responsible for a trait of interest. Our lab has created a large population of mutant poplar trees for studying phenomics. Poplar plays an enormous role in biotechnology and biofuel production. By having a large population of organisms with various mutations, genes and interacting partners may be identified. Specifically, we can identify genes responsible for tree stature, wood development, growth rate and pest resistance. The mutant *rosewood* is characterized by a vibrant red wood due to an accumulation of pelargonidin, the chemical that gives strawberries and cherries their red colour. Previous work on the mutant has shed light on the possibility of a microRNA regulating the biosynthesis of pelargonidin. Elucidating the function of the potential microRNA and its downstream targets will provide insight for applications in plant biotechnology. As well, it will be the first experimental validation of a microRNA in plants that regulates wood properties.

Encapsulation of a Small Hydrophilic Drug in Injectable PLGA Microparticles for Treatment of Pancreatic Cancer

Presenter: Christina Schweitzer, Chemical Engineering
Faculty Supporter: Dr. Ronald Neufeld, Chemical Engineering

Pancreatic cancer is the fourth largest cause of cancer-related deaths in Canada, and has the highest mortality rate of all major cancers. The typical methods of treatment: chemotherapy and radiation have

significant side effects, as they do not target the tumour specifically. Targeted therapies are being developed that would specifically affect the pancreatic tumour, leaving healthy cells undamaged. A small, hydrophilic drug has been shown to inhibit the activity of Neu1 sialidase, an enzyme involved in the activation of the growth process, which is upregulated in tumour cells. Previous research has shown that encapsulation of the drug in a surgically implanted PLGA capsule allows for drug release over a period of several weeks, inhibiting tumour growth. A microparticle form is desired, to decrease the invasiveness of the treatment. Encapsulation of the drug was performed using an aqueous double-emulsion method, resulting in a drug encapsulation efficiency of 37%. A mean particle size of 125 μm was obtained, within the range acceptable for injectable particles. Further experiments will be performed to compare the encapsulation efficiency with microparticles prepared using an organic single-emulsion method. The release kinetics of the drug will be characterized *in vitro* using HPLC analysis, and its effectiveness in inhibiting tumour growth will be assessed using tumour cell cultures and animal models. Should this dosage form prove effective at inhibiting tumour growth, it may lead to the formulation of an injectable dosage form capable of sustained release.

Cleavage of Arpin by Calpain as a Potential Regulation Mechanism of the Arp2/3 Complex and Cell Motility

Presenter: Renee Potashner, Biomedical and Molecular Sciences
Faculty Supporter: Dr. Peter Greer, Cancer Biology and Genetics

Cell movement is mediated by cycles of actin polymerisation. A novel protein, Arpin, was discovered that has been suggested to decrease cell motility through competitive inhibition of WASP family proteins, the activators of the complex driving actin polymerisation. In preliminary studies, Arpin was found to inhibit the Arp2/3 complex (Gautreau and Blanchoin, personal communication). Arpin contains sequence homology to the Arp2/3-binding site of WASP proteins. Calpains, a family of intracellular calcium-dependent cysteine proteases, can be found near the plasma membrane and the concentration of calcium ion required for activation is decreased when calpain is bound to the plasma membrane in the presence of phospholipids (Leloup et al. 2010). The common localization of calpain and Arpin, along with the known contributions calpain has in regulating other cell motility proteins, makes calpain a likely candidate for Arpin regulation. By transfecting calpain wild-type (pz/pz), knockdown (p/p) and lentivirus rescue mouse embryonic fibroblasts with a plasmid containing the Arpin gene (c15orf38), I hope to show the presence of differential cleavage of Arpin by calpain in the wild-type cells compared to the calpain knock-down cells through Western blot analysis. Understanding how Arpin is regulated will provide a basis for further research in cell motility, which has contributions to cancer metastasis and other diseases.

40Ar/39Ar Dating and Characterization of Hornblende from the Nelson Plutonic Suite, Southern Kootenay Arc, SE B.C.

Presenter: Jessica Pickett, Geological Sciences
Faculty Supporter: Dr. Doug Archibald, Geological Sciences

The Kootenay Arc located in SE B.C. has experienced more than one episode of tectonism, metamorphism and plutonism. The Mid-Jurassic to Eocene thermal history of the area has been investigated using K-Ar and 40/39 dating methods of biotite and muscovite; however there are no reliable hornblende dates from this area. This study will investigate two easterly stocks of the Nelson Plutonic Suite, the Mine and Wall stocks. Both of these have U-Pb zircon ages between 171 and 168 Ma but record a wide range of mica cooling and overprinting dates between 166 Ma in the west and 67 Ma in the east. 40Ar/39Ar age spectra for hornblende from 11 rocks in these stocks comprising a transect of the area, will aid in defining the higher temperature part of the thermal history. Previous attempts to prepare bulk hornblende separates were unsuccessful due to overgrowths and intergrowths of biotite, chlorite, plagioclase and K-feldspar. Part of this study involves testing the efficiency of SELFRAG disaggregation,

which uses pulses of electrostatic power to break apart the biotite-hornblende-epidote granodiorite along mineral cleavage planes and grain boundaries. This should lead to higher purity mineral separates and better dates. Scanning Electron Microscopy (SEM) and Microprobe analysis analyse the separates looking for K-rich inclusions and the hornblendes variation in chemistry. Ca/K ratios are typical of igneous amphibole. Combined with previous K-Ar and 40/39 results for micas these hornblende dates should provide some insight into the history of the Next Creek fault and the thermotectonic history of the area.

What Effects do Silver Nanoparticles Have on *Drosophila melanogaster* Larvae with Respect to Stress Response and Microbial Intestinal Composition?

Presenter: Ishanee Jahagirdar, Biology
Faculty Supporter: Dr. Virginia Walker, Biology

Silver nanoparticles (AgNPs) have been shown to be highly toxic to certain organisms and can induce stress in cells. The purpose of this study is twofold: first, to examine the stress response to AgNP exposure on *Drosophila melanogaster* (fruit fly) larvae, and secondly, to determine if exposure to AgNPs alters the intestinal bacterial composition. To answer these questions, fruit flies were grown on food mixed with AgNPs. Larvae were monitored for their ability to escape from heat stress and their climbing ability before metamorphosis into pupae. Larval wandering behaviour was examined by devising a test to determine if they could crawl their way back to food. In order to examine the flora in the digestive tract, DNA was isolated from dissected larval intestines, purified and then a relatively conserved portion of the bacterial DNA was amplified. These samples were then sent for pyrosequencing, which is a technique that will allow us to examine the composition of the intestinal microbial population. Preliminary results have been mixed. There has been some suggestion of a stress response, but this has not been very consistent. Therefore, more experiments need to be done. However, the bacterial population of the gut does seem to change after the treatment, indicating that AgNP exposure results in altered microbial composition in *D. melanogaster* intestines. It is hoped that this research will help elucidate our understanding of the impact NPs have on organisms, which is highly relevant because of the high prevalence of NPs in consumer and medicinal materials.

Session III: Influences on Perception

Speaker's Corner, Queen's Learning Commons, Stauffer Library
Thursday, March 7, 12:45-2:30
Moderator: **TBA**

Dysphoria and Eyewitness Identification

Presenter: Samantha Allison, Psychology
Faculty Supporter: Kevin Rounding, Psychology

Research has shown that a chronic and temporarily induced negative mood increases accuracy on facial recognition tasks (Rounding, Jacobson & Lindsay, 2011). Specifically, a positive relationship between chronic negative mood (dysphoria) and accuracy across negative and neutral affect conditions has been found. The current research extended these findings to investigate the causality of a temporary induced negative mood as well as whether it was additive to the accuracy of people with dysphoria. One hundred and sixteen participants completed 6 trials of a facial recognition task. They were then randomly assigned to a negative or neutral mood induction, and following this, they completed 6 more trials of the facial recognition task. There was not a significant relationship between dysphoria and accuracy on the first facial recognition task but on the second task, higher levels of dysphoria were related to greater accuracy, specifically for correct rejections and fewer false alarms. This accuracy was independent of the participants' responses to the mood induction. As well, a temporary negative mood induction bolstered accuracy for only those participants with lower levels of dysphoria. This suggests that a negative mood

induction does not have an additive effect to the accuracy of people with a chronic negative mood. These results may be attributed to the cognitive similarities between a primed temporary negative mood and an actual chronic negative mood or a greater motivation for dysphoric people to attend to socially-relevant stimuli.

The Moderating Effect of Polymorphisms in the Serotonin-Transporter Gene on the Relation of Maternal History of Depression to Enhanced Theory of Mind

Presenter: Arielle Zahavi, Psychology
Faculty Supporter: Dr. Kate Harkness, Psychology

Theory of Mind (ToM) is the ability to attribute mental states (e.g., beliefs, desires) to others in order to understand and predict their social behavior. Decoding others' mental states based on immediately perceptible social information (e.g., facial expressions) forms the foundation of this ability and is significantly impaired in individuals with depression. Interestingly, those who possess various risk factors, such as sub-threshold symptoms or a past or maternal history, but who are not currently depressed, show *enhanced* ToM decoding accuracy. Although having a mother with depression is one of the most powerful risk factors for adulthood depression, the mechanisms by which it might result in superior ToM have not been examined. Additionally, the relation between a genetic risk factor, the serotonin transporter-linked polymorphic region, to ToM, has not yet been studied. I will be the first to examine this relation as well as its role as a moderator in the relation of maternal depressive history to superior ToM, using a cross-sectional design and an archival sample of depressed and non-depressed young adults. I hypothesize that both maternal depressive history and possession of at least one s-allele will be associated with enhanced ToM ability, as well as an interaction whereby individuals with both a maternal history and at least one s-allele outperform those with a maternal history but who are l-allele homozygous. Since superior ToM decoding is associated with social dysfunction, the results may contribute to the identification of at-risk individuals and have implications for the prevention and treatment of depression.

The Financial Imbalances that Brought Down GDP: An Empirical Investigation of the 2008 Economic Crisis

Presenter: Lauri V. Kytömaa, Economics
Faculty Supporter: Dr. David Longworth, Economics

This presentation focuses on the research I worked on for my 4^{th} year seminar paper in economics. I analyzed the world's largest economies to assess what factors explain the slowing growth of gross domestic product following the 2008 crisis. The specific factors I examined are: (i) credit growth; (ii) housing price growth; (iii) equity price growth; (iv) banking supervision; and (v) sovereign debt. The results suggest a negative and statistically significant effect for credit growth on post-2008 GDP growth rates. Sovereign debt also shows to have a weak negative effect on GDP growth rates following the 2008 crisis. The results for the other factors prove inconclusive and require additional research and a larger sample size to provide a more persuasive argument. The presentation will spend the majority of the time justifying why these factors may have been important in the investigation of the slowed gross domestic product. After these factors have been adequately explained the presentation will discuss the findings of my statistical work and what these results imply and contribute to economic theory.

Revealing the Process: An Infrared Photographic Analysis of the Work of Paul Kane

Presenter: Ian E. Longo, Classics
Faculty Supporter: Dr. George Bevan, Classics

The ability to examine a painter's working methods is not only valuable to art historians and conservators

but, in the case of the early Canadian painter, Paul Kane (1810-1871), provides crucial information as to the accuracy and historical value of many of the scenes he painted. Paul Kane's approximately 130 works in oil, painted in his Toronto studio from sketches made during his two voyages through the Canadian northwest during the 1840s, have told us much about the culture and lifestyle of the Métis, Sioux and other native Canadian peoples before the advent of photography. The historical accuracy of these paintings has now been called into question by the use of low-cost infrared photography.
By utilizing infrared photography in the 700-1100nm range, we are now able to see what lies beneath the surface layers of oil paint and see the many changes Kane made between his observations in the field and his final product in the studio. Changes range from the slight adjustment of a headdress to the creation of entirely fictional features in the landscape. In some cases changes were made to conform to the expectations of his patrons. Although infrared photography has already been used in the world of art history for some time, recent advances in modifying consumer-level DSLR cameras, the development of advanced quartz-fluoride optics, and novel imaging processing techniques have transformed Infrared photography into an affordable and efficient way to study Paul Kane's artistic process.

Can Change Probability Contextual Information Improve the Change Identification Process?

Presenter: Calvin Tseng, Life Sciences, Biomedical and Molecular Sciences
Co-Authors: Felix Ball; Maximilien Chaumon; Niko Busch; Institute of Medical Psychology, Charité Universistätsmedizin, Berlin, Germany

The visual world is extremely complex, so unconscious mechanisms exist to autonomously direct attention to objects with behavioral importance. One such mechanism – contextual cueing – utilizes the visual context of a scene to focus attention. Therefore, because contextual information unconsciously influences human visual perception, its role in enabling individuals to process scenes is of great interest. This study examined whether contextual information regarding change probability can facilitate the process of change identification. MATLAB and Psychophysics Toolbox Version 3 were used to present abstract scenes in a one-shot change blindness paradigm. Two types of scenes were presented: one in which context was predictive of change likelihood, the other in which context was non-predictive of change likelihood. The accuracy with which subjects detected and localized changes in both scene types was compared, but no significant difference in accuracy was found. This observation suggests that contextual information regarding change probability alone is insufficient to improve the change identification accuracy. Subsequently, it may be that even when individuals are aware that a visual scene is likely to change, they still require additional contextual cues to improve change identification.

Session IV: Mood, Memory & Mind

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Thursday, March 7, 12:45-2:30
Moderator: TBA

Differences in the Clinical Profile of Adolescents and Young Adults with Major Depressive Disorder Across Parental History Groups

Presenter: Jennifer Gillies, Psychology
Faculty Supporter: Dr. Kate Harkness, Psychology

An important causal factor of depression is family history — there is compelling evidence that Major Depressive Disorder (MDD) is familial. Although the connection between a maternal history of depression and offspring risk is well established, paternal history has been largely ignored in research thus far. The first goal of this study is to examine differences in the clinical profile of MDD across parental depression history groups (i.e., both-parent history versus maternal history only versus paternal history

only versus no parental history). Based on previous findings, I predict that the severity of the clinical course of MDD (as operationalized by a higher severity of depression and anxiety symptoms, an increased likelihood of recurrence, and a greater likelihood of a comorbid anxiety disorder) will be highest for offspring with a both-parent history of depression, followed by those with a maternal history only, followed by individuals with a paternal history only, and lastly by offspring with no parental history of depression. The second goal is to determine if the group differences hypothesized above are further moderated by offspring sex. To date, very little is known about how parental history influences the clinical presentation of MDD in depressed offspring. This study will contribute to a limited body of research, and is unique in that it will include four parental history groups as well as offspring sex in its analyses. The study will use a quasi-archival sample of approximately 250 participants between 12 and 29 years of age, who have been diagnosed with MDD.

Self-Verification and Self-Enhancement in Newly Formed Multicultural Groups

Presenter: Nicola de Souza, Psychology

The purpose of this study is to determine when self-verification (the motivation to confirm one's self-concept) and self-enhancement (the motivation to be viewed in a positive light) occur in newly formed multicultural groups. Many suggest that enhancement is a prepotent motive to verification (Sedikides & Gregg, 2008; Sedikides, 1993), but when verification occurs, it results in greater group performance, trust, and group identification in diverse groups (Polzer, Milton, & Swann, 2002). Research on intimate relationships has shown that factors such as relationship length, as well as levels of future certainty, commitment, and evaluation can influence preferences for enhancing versus verifying feedback (Swann, De La Ronde, & Hixon, 1994; Campbell, Laackenbauer, & Muise, 2006). Based on this research, I predict that groups with a certain future, high commitment, and low evaluation, which I will designate as the "married" groups, will demonstrate higher self-verification than will groups with an uncertain future, low commitment, and high evaluation, designated as "dating" groups. These "dating" groups will demonstrate higher enhancement compared to the "married" groups. As well, as a result of greater cultural verification, the "married" groups will exhibit greater cultural mosaic beliefs (emergence of diverse cultural perspectives and better overall group performance) about their group as well as higher levels of trust, group identification, and group commitment, relative to the "dating" group. The "married" groups will also demonstrate higher performance than the "dating" groups on tasks assessing creativity and accuracy.

What Makes the Good Life Good? An Investigation into the Nature of Happiness

Presenter: Elyse Platt, Philosophy
Faculty Supporter: Dr. Jon Miller, Philosophy

My research focuses on the nature of happiness as presented by contemporary philosopher Fred Feldman in his recent work, What is This Thing Called Happiness?(2010). Feldman offers an innovative theory of happiness that suggests happiness is contingent on a subject's capacity to acquire more pleasure than displeasure in his or her surroundings. Feldman's model is a valuable contribution to the study of happiness because it calls attention to the power a subject has in determining her own happiness. Like many of his predecessors including Aristotle, Feldman describes the happy life as the Good Life. However, where Aristotle measures the Good Life in terms of virtue, Feldman uses welfare as his metric. A problem with Feldman's approach is that he rejects Aristotle's arguments for why happiness is the Good without providing a suitable alternative. In this paper, I address the limitations of Feldman's model by examining the implications of this omission. I will argue that Feldman lacks a conclusive argument for why the Good Life consists of welfare. Most significantly, Feldman's account is problematic because it leads to the unusual conclusion that many of us are not in fact pursuing the Good Life for fear of becoming moral monsters. By reintroducing virtue into our description of happiness, and arguments for why happiness is our greatest good, I think that we can rescue contemporary theories of happiness from the repugnant moral conclusions that I have suggested are present in Feldman's work.

Eliciting Music-Evoked Autobiographical Memories (MEAMs) in Individuals with Mild Alzheimer's Disease: A Case Series

Presenter: Deanna Choi, Psychology
Faculty Supporter: Dr. Lola Cuddy, Psychology

Numerous studies have examined the possibility that listening to music facilitates learning and memory, and various music therapy interventions have yielded promising results for individuals with pathological amnesic disorders. However, the mechanisms by which such phenomena operate are largely unknown. Here I will pursue the hypothesis that music processing pathways are linked to autobiographical memory networks, allowing the spontaneous activation of memories for personal events (music-evoked autobiographical memories, or MEAMs). These reminiscences are often of a pleasant or nostalgic nature, inducing a positive affective state. These emotions, in turn, elicit a sense of identity and self-awareness that contributes to psychological well-being. I will present data from a series of participants diagnosed with mild Alzheimer's disease, all of whom have varying degrees of short-term memory deficits and cognitive impairments. After listening to a 30-second musical excerpt (in a total sequence of 24), they were asked to describe any memories that may have been conjured by the music, as well as their overall attitude, familiarity, and emotional reaction towards the piece. The experimental stimuli included 12 pieces from a well-known repertory of instrumental classical music, which were matched to 12 similar excerpts controlled for instrumentation, tempo, mode, and stylistic patterns. I video-recorded the interviews, analyzing both verbal and behavioural responses to the musical excerpts played. Data will be compared with that obtained from healthy controls. I will then discuss the implications of the current pilot project towards future studies and potential applications in clinical settings.

Innate Musicality and Brain Plasticity

Presenter: Shera Lumsden, Music
Faculty Supporter: Dr. Margaret Walker, Music

The field of neuroscience has undergone a recent advancement upon the realization that music has a profound effect on brain plasticity. The hypothesis that a person is born with a brain that is "hard-wired" for use has been replaced with the understanding that while the brain has innate tendencies, it is modifiable and adapts in response to experience (Habib & Besson, 2008). Brain plasticity is necessary for cognitive development to continue (The Neuroscience Institute, 2012). Most infants are born with the basic neural networks needed to begin to adapt to their world, including their musical world, and as they grow and learn, neural networks are formed and developed in response to their experiences. The brain, however, does not always develop as expected, and one significant sign is a delay in gross motor coordination. This paper will present research discussing brain areas and structures associated with coordination and those involved in the processing of music, hypothesizing there might be a relationship between the two. This will have implications for further study regarding the effects of music on the brain and the possibility that music can be used to facilitate brain plasticity and assist in the development of coordination skills in those with developmental delays.

Session V: Disambiguation

Speaker's Corner, Queen's Learning Commons, Stauffer Library
Thursday, March 7, 2:45-5:10
Moderator: TBA

A Chinese Whore Making Good Business on Gold Mountain: Using Historical Research to Create Historical Fiction

Presenter: Jacqueline Blanchard, History

For the 2011 – 2012 school year, I engaged in a year-long research project on Chinese sex workers in the

"Wild West" during the Antebellum period. Typically brought to the United States under false pretences by members of Chinese tongs, Chinese sex workers were kept in homes and brothels starting from a very young age. Missionary groups attempted to "free" Chinese sex workers from these brothels, educate them and raise awareness of their plight. Historical accounts of these activities come exclusively from the perspective of the missionaries themselves, rather than the perspective of Chinese sex workers, which results in a biased account of Chinese sex workers as helpless girls. However, the research that I did indicates that there may have been examples of agency amongst Chinese sex workers. In order to share my research on agency amongst Chinese sex workers during the Antebellum period, I opted to write a historical fiction (a short story which was eventually published in the Queen's Undergraduate Review). It is the process of translating historical research into historical fiction which I will focus on presenting. I rewrote the story and plot a number of times in order to maintain a balance of historical fact and creative license, and I struggled with the ethics of portraying historical characters and events for creative purposes. I learned what's valuable for writing a successful historical fiction: exhaustive research, the understanding that realism is more impactful than sensationalism, and constant awareness of personal agenda or bias.

Close-Range Photogrammetry for Documenting and Enhancing Thamudic Rock Art and Epigraphy

Presenter: Stephanie Normand, Classics
Faculty Supporter: Dr. George Bevan, Classics

The eastern frontier of Roman Empire was ethnically and culturally diverse. Yet despite the abundance of evidence for such diversity, we know relatively little about the peoples who populated the Roman frontier. A good case in point is the Thamudic people of the Hisma desert in modern day southern Jordan. The written historical record provides only two references from the classical period, along with a handful from the later Islamic period, all of which are contradictory. What is more, the sources give virtually no hints about their way of life. The archeological record is not much more revealing. In fact, the only tangible traces we have of these people are the vast numbers of inscriptions and petroglyphs they left behind. These inscriptions, however, can often be difficult to study due to centuries of weathering and vandalism, both ancient and modern. A way to document and enhance this material in a quick and accurate way in harsh, remote environments is urgently needed. Close-range photogrammetry with digital SLR cameras provides the ideal solution. Three-dimensional data from photogrammetry is quick to capture in the field, extremely accurate and requires nothing other than a consumer camera and software for post-processing. Using software adapted from the mining industry we can use a process known as depth-mapping to enhance even extremely shallow incisions and to reveal texts that have been damaged, or even intentionally erased. By doing so, we can gain a better understanding of the lives of these people on the Roman frontier.

Antinous: The Pederastic to the Divine

Presenter: Desmond Wong, Classics
Faculty Supporter: Dr. Fabio Colivicchi, Classics

No face is more recognized as the ideal of ancient male beauty than Antinous and yet little is known about his life. Scholars have used his relationship with the Emperor Hadrian as evidence for their own means. This relationship has gone from a sordid and scandalous affair to purely platonic and educational, depending on the personal orientations of the scholars and the cultural trends of their age. The controversy about Antinous began immediately: the establishment of his cult after his death was mocked by contemporaries as an exaggeration and inappropriate mourning. Soon after it was fuel for Christian critics about the arbitrary nature of pagan deities. However, in Hadrian's lifetime the cult became an established sect of the Imperial Religion, spreading throughout the Eastern provinces. Why did this cult

function successfully in the East, while being scorned in the West? My paper will explore the reasons for the different response. I will argue that the pederastic relationship had been a long established tradition within the East but mocked as inappropriate in the West, at least in a public setting. In Greek culture there were numerous cases of such relationships in myth. The contemporaries who criticized the relationship of Hadrian and Antinous, and especially his cult, were reacting against a trend of Hellenization of Roman culture. This had been a debated issue since the Roman conquest of the East, and many times before, the champions of Roman tradition had depicted the spread of Greek ways as the triumph of moral corruption.

Palladas, the Jordan River and Persia

Presenter: Rachel Di Cresce, Classics
Faculty Supporter: Dr. George Bevan, Classics

In May of 337 C.E Constantine the Great fell ill and died while preparing for a campaign against Persia. Due to his imminent death, Constantine asked to receive baptism in Nicomedia instead of where he originally desired - the Jordan River. His desire receives little attention from Eusebius in the *Vita Constantini* and from modern scholars alike. Traditionally, many scholars view Constantine's late baptism as evidence of his insincere affiliation with Christianity whereas it is now clear that he wished to defer baptism so he could die free from sin. The recent re-dating of the Greek poet Palladas, by Kevin Wilkinson, to the reign of Constantine casts Constantine in a much different light than the religiously moderate leader many want to see him as. Not only did he hold a sincere belief in Christianity, but acted as a benefactor to the church, promoted the spread of Christianity while marginalizing paganism, and founded a Christian capital in the East. Constantine also sent a letter to Shapur II praising the Christian Persians under his rule. His potential baptism in the Jordan River, presumably before his campaign, is an extremely odd and Messianic act – one which was never repeated afterwards by an emperor. It is clear this war was intended to be a crusade led by a zealous Christian emperor. This was not a moderate emperor who laid the foundations for the Christian Empire to flourish but rather an extreme outlier among the tradition of Christian emperors.

Drug Policy in Sport: On the Genealogy of the Immoral Status of Anabolic - Androgenic Steroids. A Polemic.

Presenter: Shane Senecal-Tremblay, Sociology
Faculty Supporter: Dr. Rob Beamish, Sociology

This research has endeavored to establish that the normalized deviant judgment ascribed to athletes caught using performance-enhancing substances in professional sports organizations is upheld only by virtue of a fallacious assumption; that a breach of the Athletes Professional Code of Conduct is equitable with a breach of both the ethos of our society and of Western professional sports organizations' "spirit of competition". The significance of this distortion is recognized in relation to the way professional sports organizations enforce these policies through disciplinary measures that are subjected on docile athletes – effectively measuring and judging athlete's drug-related choices through appeal to an ideology based on an outdated and pseudo-scientific narrative. It has therefore been my intention to, through a deconstruction of the narrative, distinguish how these athletes have not so objectively disregarded the ethos of the organizations they compete in but rather that they have acted in accordance with the latent ethos of professional sports organization in contemporary Western society and have then been judged, and punished upon their violation of the misguided manifest policies. Working from this premise I have conducted a theoretical analysis of why athletes passively accept their exploitation, and developed policy diagnoses for the organizations in question.

A Christian's Defense of Paganism: The Efforts of Nonnus of Panopolis to Recapture the Receding Paganism of the Late Antique East

Presenter: Justin D Yule, Classics
Faculty Supporter: Dr. George Bevan, Classics

The 5th century poet, Nonnus of Panopolis, forces us to re-think our understanding of late-antique culture. This Egyptian Poet, now understood to be a Christian, was responsible for two striking works of verse, the *Paraphrase of St. John,* and the *Dionysiaca*. The former is a nuanced re-writing of St. John's gospel into epic metre; the latter, a grand tour of the ancient world, modelled on Homer, paying special attention to the myriad of cults and myths in their physical context. The *Dionysiaca* has for a long time been understood as the last gasp of Greek Epic literature, a final episode in the literary tradition started over a millennium before by Homer and Hesiod. Writing at a time when the Church was vigilant in working to defend a perceived 'Orthodoxy', Nonnus' work cannot be easily understood in our current framework. With an old-fashioned acceptance of the Christian/Pagan Binary, it makes no sense that a Christian writer should contribute such a monolithic work to the Pagan tradition. I hope to instead rehabilitate Nonnus' *Dionysiaca* as a work that was very much a product of its time. The attentions of my presentation shall be focused on this second work and the way in which, by giving Pagan myth a geographic location, Nonnus showed a concern for the homogenizing influences of a Christian binary. It can be argued that Nonnus sought to accommodate Christianity within the broader Hellenic tradition, at a point when the future image of Christianity in the Mediterranean was unsure.

The Effects of Intra-Cerebral Neuropeptide Y Infusion into the Ventral Hippocampus on Anxiety-Like Behaviour in the Elevated Plus-Maze

Presenter: Geoffrey Harrison, Psychology
Faculty Supporter: Dr. Janet Menard, Psychology

Neuropeptide Y (NPY) is one of the most prominent and evolutionarily conserved peptides in the mammalian nervous system. The hippocampus, which contains high densities of NPY producing cells and receptors, is considered a primary structure in the neuroanatomical circuitry of anxiety. Although once considered a homogenous structure, the ventral aspect of the hippocampus is now considered to play a more explicit role in anxiety regulation. To date there is no direct evidence implicating ventral hippocampal NPY in anxiety modulation. By contrasting the defensive behaviours of rats (N=24) in the elevated plus-maze (EPM) model of animal anxiety following intra-cerebral infusions of either experimental NPY (n=12), or saline (n=12), I expect that NPY infusions into the ventral hippocampus will cause marked reductions in anxiety-like behaviour. Specifically, NPY infusions at that site will increase the proportion of entries into, and time spent in, the open arm sections of the EPM, as well as decrease secondary defensive behaviours such as stretch-attend and flatback postures, head-dipping, and sniffing, while in protected portions (walled arms) of the EPM.

Session VI: Research Informing Policy

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Thursday, March 7, 2:45-5:00
Moderator: TBA

Liberty and the City

Presenter: Thilo Schaefer, Political Studies
Faculty Supporter: Dr. A. Lister, Political Studies

The city is the locus of our every-day lives. It is where we are free to live, socialize, shop, and labour. However, with this freedom also comes unfreedom. Policies and systemic structures are capable of

denying freedom as much as supporting it. With the freedom of the automobile came the erosion of sidewalks, with the increased provision of common parks (like those in gated communities) came the elimination of genuine public space, and with the construction of subsidized housing projects came the destruction of many dynamic neighbourhoods and socio-economic segregation. Debates over the content of "freedom" have long been a tradition within political theory. This thesis transplants those debates to the urban realm of the "every-day." Guided by the works of both urban theorists (including David Harvey and Jane Jacobs) and theorists of liberty (Rawls, Nozick, and G.A. Cohen, among others), the completed project will synthesize the two and demonstrate how features of urban environments affect the realization of human freedom.

The Private Eye of Public Life: Surveillance, Security, and Urban Governance in the City of Toronto

Presenter: Michael Carter, Sociology
Faculty Presenter: Dr. David Murakami Wood, Sociology

Market forces increasingly drive the development of urban space in globalized cities. Following deindustrialization, some municipalities have become dependent upon tax revenues derived from office towers. City managers and officer tower developers work under the pressure of competition to ensure their spaces are attractive to this highly mobile work force; safety and security are key selling points. In Toronto, large sections of urban space have been privatized and are policed by private security. Much of the privately owned space is designed to be publicly accessible, creating new dynamics between private security and public police. Changes to federal and provincial legislation, combined with a rapid expansion in the deployment of private security guards, signal an emerging urban governance model that supports private-public partnerships in policing. Under the supervision of David Murakami Wood, I conducted interviews with high-ranking politicians, security professionals, and social services executives in Toronto. These interviews revealed concerns about the erosion of public space, the treatment of marginalized populations, and inadequate private security regulations. Some argue the legal rights of private property owners permit security and surveillance practices that violate democratic values. Clearly, there is tension between the market forces that inform private policing, and the civic accountability of public police forces that remains unresolved. My research suggests new legislation is required to ensure this emerging urban governance model, which features private policing, preserves the democratic rights and freedoms of all citizens.

Healthy Immigrant Effect and Immigrant Women's Health Issues in Canada: A Scoping Review of Health Measures

Presenter: Hyosung Jung, Nursing
Faculty Supporter: Dr. Christina Godfrey, Nursing

The healthy immigrant effect describes a phenomenon in which immigrants lose health advantage overtime as they reside longer in their migrated country. A scoping review was conducted to observe whether this phenomenon is also observable in the Canadian immigrant demographic specific to women's health issues. A search strategy was used to collect relevant quantitative studies from MEDLINE, Embase, PsycINFO, Healthstar, and CINAHL databases. The studies examined the relationship between duration of residence in Canada and cervical screening rates, intimate partner violence, help seeking rates for intimate partner violence, and a range of obstetrical outcomes including antenatal and postpartum depression, maternal placental syndrome, illness and hospitalization during pregnancy, and preterm birth. The studies reported gradual approximation of immigrant health status and behaviours to long-term resident or Canadian-born patterns. However, the direction of the effect varied for each health measure. Immigrants were less likely to experience intimate partner violence, maternal placental syndrome, illness or hospitalization during pregnancy, and preterm birth, but were more likely to suffer from antenatal and postpartum depression and less cervical screening. Ethnic

background and country of origin seem to modulate these effects. Clinical implications of the study encourage the health care system to consider the unique needs and risk factors of the recent immigrant population including economic, language, and social challenges, while discouraging acculturation of immigrants to harmful lifestyles and behaviours. The researchers recommend future studies to account for specific dynamics within ethnic and language groups and to utilize more longitudinal designs.

Can the Atlantic Salmon Restoration Program Safely Re-Integrate Atlantic Salmon to Lake Ontario?

Presenters: Laura Gibson, Environmental Studies; Leia de Guzman, Commerce and Environmental Studies; Michelle Lavery, Biology; Christine Ly, Life Sciences; Kira MacDougall, Environmental Studies

Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

Atlantic salmon (*Salmo salar*) are an economically valuable species and have inhabited the lakes and rivers of Eastern Canada since the last post-glacial period. However, since the end of the 19th century, Atlantic salmon populations have collapsed in Lake Ontario due to land clearance and dam and mill construction. In 2006, the Atlantic Salmon Reintroduction Program (ASRP) was established in Lake Ontario in an effort to recreate a self-sustaining salmon population. The ASRP aims to rebuild the Lake Ontario Atlantic salmon population by stocking fish from genetically diverse broodstock, restoring Atlantic salmon habitat and monitoring water quality. The ASRP also includes a public education component to emphasize the importance of maintaining the Atlantic salmon population. However, re-introduction programs like the ASRP can be challenged by interspecific competition. Chinook salmon are known to induce male agonistic behavior in Atlantic salmon. In addition, Atlantic salmon juveniles are out-competed by Rainbow trout. Furthermore, the prospective diet of Atlantic salmon in Lake Ontario is thiamin-deficient, which may lead to neurological, developmental and reproductive problems as well as Early Mortality Syndrome (EMS). We will conduct research in partnership with Bring Back the Salmon Lake Ontario, Atlantic Salmon Conservation Fund and the Atlantic Salmon Federation to investigate the potential threats to both Atlantic salmon and existing species that may result from the ASRP for Lake Ontario. Findings will be presented as well as recommendations for alterations to the program to ensure that the ASRP is a safe and successful endeavor.

Expressive Writing as an Intervention for Anxiety's Negative Effects on Women Negotiators

Presenter: Naomi Rosenfeld, Psychology

Faculty Supporter: Dr. Susan Brodt, Business

The purpose of this research is to study the effects of anxiety resulting from negative stereotypes on women's negotiation performance (Kray, Galinsky, & Thompson, 2001); furthermore, I test whether or not expressive writing may act as an intervention and moderate the relationship. I hypothesize that dispositionally anxious negotiators will perform worse in a stereotype-threatened environment relative to those with low anxiety. Secondly, I hypothesize that among high-anxious negotiators, those who complete an expressive writing task will report lower levels of anxiety and will be less anxious compared to their dispositionally anxious peers in the control condition. This decrease in anxiety is expected to lead to better negotiation outcomes. To test these hypotheses, I am engaging 100 mixed-sex dyads in a negotiation task and assessing a number of objective and subjective negotiation outcomes. Before the task, I am subtly reminding all participants in the dyads, whose female participants I have pre-screened for either high or low habitual negotiation anxiety, about the negative stereotypes that exist for women in negotiation. At random, half of the dyads will complete an expressive writing task just before negotiating while the other half will complete a control task. I will assess differences of anxiety and

negotiation outcome measures between the groups. Implications for theory, research, and practice will be discussed.

Session VII: Kid's Health

Speaker's Corner, Queen's Learning Commons, Stauffer Library
Friday, March 8, 9:00-10:20
Moderator: TBA

More than Just Brushing: A Study of the Socioeconomic Impacts on Oral Health in Kindergarten Students

Presenter: Alexander Rey, Engineering

Social determinants have been suggested as playing a role in the oral health status of kindergarten students. This research project examines the relationship between social factors (such as income, education, housing security, and family composition) and oral health indices (such as decayed, missing, extracted teeth (deft), debris, gingivitis, and decay type) in Brant County. The data collected by the Brant County Health Unit during 2011 and dissemination area data from the 2006 Canadian Census was used for this project. A semi-ecological analysis was performed using correlation, ANOVA, and Tukey post-hoc statistical tests. Overall, there was a significant correlation between high-risk demographic factors and high-risk oral health scores. In particular, housing related factors exhibited a significant increase between caries free and high caries groups, suggesting that housing related factors have an important impact on oral health. Furthermore, an increase in percentage of households receiving government transfers in higher decay groups suggests that access to dental insurance is not the only factor impacting of oral health, as almost all government transfer programs include a dental coverage component. These results suggest that dental programs should be targeted at areas of Brant County with high rates of families spending more than 30% of their income on housing, in addition to lower income areas. Furthermore, the findings suggest that the focus placed on the utilisation of care should be equal to that placed on access to care.

The Influence of Physical Education Class Content and Teachers' Behaviour on Physical Activity Levels of Mexican Children

Presenter: Hoda Gharib, Kinesiology and Health Studies
Faculty Supporter: Dr. Lucie Lévesque, Kinesiology and Health Studies

Gharib H, Galaviz K, Lévesque L. According to the Mexican Report Card on Physical Activity for Children and Youth, Mexico is now a leader in childhood obesity with more than 4.5 million children aged 5 to 11 years being overweight or obese. Over 40% of Mexican children and youth are physically inactive, which is a major risk factor contributing to the childhood obesity epidemic in Mexico. Physical education (PE) class environment has been shown to influence physical activity (PA) levels in school-aged children; however, this relationship has not been documented in Mexican children. Thus, the purpose of this study is to assess the influence of PE class factors (class content and teacher behaviour) on children's PA during class. PA was measured in a sample of 250 students in grades 3-5 in Mexico City during PE class. The SOFIT method was used to measure children's PA (e.g. standing), class content (e.g. management), and teachers' behaviour (e.g. instructing) during class. Multiple linear regressions will be conducted to assess the influence of class factors on children's PA adjusting for age and gender. With the staggering rates of obesity and physical inactivity in Mexico, the identification of factors influencing PA is crucial. Results can be used to guide PE class interventions and to inform school policies.

Investigating the Association Between Active Transportation to School and Bullying in Canadian Schoolchildren

Presenter: Ioana Cozma, Community Health and Epidemiology
Faculty Supporter: Dr. William Pickett, Community Health and Epidemiology

Bullying, or the act of using direct or indirect physical and verbal tactics to distress or control another, has been recognized as an important problem among child populations internationally. The wide prevalence and deep impact of bullying indicates the need for targeted program implementation to eliminate the bullying epidemic. Focusing on new associations between bullying and other health behaviours will give insight and direction for new, more targeted bullying eradication approaches. The association explored in this undergraduate thesis project is between bullying and active transportation, defined in this study as walking and bicycling. Engagement by students in active forms of transportation to school is generally on the decline in North America. This is of concern, as methods of transportation including cycling and walking are forms of physical activity that can be an important indicator of improved health. Planned analyses will be based on the sixth (2009/10) Canadian cycle of the Health Behaviour in School-Aged Children (HBSC) Study. The HBSC study is a World Health Organization cross-national study focused on the investigation of health behaviours among adolescents in 43 participating countries. A variety of statistical analysis tools will be employed to determine whether a link can be drawn between students who engage in active transportation and their involvement with bullying (whether as a victim, a perpetrator, or both). This will provide foundational information for health promotion efforts. By targeting the concerns of youth and their parents and providing objective evidence about the bullying risks (real or perceived) involved in active transportation, student may be encouraged to adopt a healthier, more active lifestyle that could eventually translate into lower obesity rates and a healthier population.

Three-Year-Olds Overimitate when Actions are Presented as Conventions

Presenter: Kathleen Merwin, Psychology

Imitation is a universal social learning mechanism, observed in all countries, across all ages. Three- to 5-year-olds are so prone to imitation that they occasionally exhibit "overimitation" – that is, they imitate actions that are apparently superfluous to achieving a particular goal. One explanation for overimitation is that children believe that there is something causal about the superfluous actions. An alternative explanation is that children believe that the superfluous actions reflect a particular "style" of performing the action that may be conventional within the community. The goal of the present study is to address these two possibilities by investigating whether children overimitate equally from knowledgeable and ignorant models. We reasoned that if children believe that the actor's superfluous actions are causal, they might overimitate anytime those intentional actions precede the achievement of a goal. In contrast, if children are more concerned about conventional ways of doing things, they might only overimitate superfluous actions when it is clear that they are being presented as conventions. Sixty-eight 3-year-old children were allowed to use a novel toy machine after causally relevant and superfluous actions on the toy were demonstrated by a knowledgeable or ignorant model. Results suggested that children overimitated more when the model was present (versus only caregiver present) and when the model was knowledgeable (versus ignorant) of the toy machine. These findings suggest that children do not simply overimitate any intentional actions modelled by actors that precede a goal. Instead, they selectively overimitate when there is evidence that those actions are conventional.

Session VIII: Decoding Hegemony

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Friday, March 8, 9:00-10:20
Moderator: TBA

"Our God, Our Country, and Our Queen" - Orangeism, the Prince of Wales, and the Canadian Popular Political Tradition

Presenter: Daniel Panneton, History
Faculty Supporter: Dr. Rosanne Currarino, History

Despite the Royal Visit to Kingston in 1860 being billed as a celebratory event, it would not be remembered as such. The Orange Order, one of the largest fraternal organizations in the Canadas at the time, attended the Royal Arrival, despite receiving explicit instructions not to do so. Loudly protesting what they perceived to be an attempt to convince the Crown that the Canadas were Catholic in nature, the Orangemen pushed a two day standoff with the Royal Party. The Royal representative, the Prince of Wales, never left his boat, and Kingston never saw its Prince. In spite of this, the Orange Order proclaimed a victory. They, like their brothers at the Siege of Derry, had stood firm in the fact of Papism. What may seem today like an overreaction on the part of the Orangemen was actually an illustration of the organized violence that characterized mid-nineteenth century Canadian popular politics. The Orange Order represented the interests of Conservative, Tory Protestants, and their actions that day illustrate the fact that said group had reason to be frustrated at the time. The Orange Order, instead of being a violent and unwanted anomaly, represent but an important aspect of the Canadian popular political tradition.

Uncovering the Legitimacy of Possible Causes of Conflict in African States

Presenter: Nicole Mastrocola, Political Studies

There has been prominent conflict and intense violence throughout African countries in the past and recent years. This paper will present research regarding the effectiveness of proposed causal mechanisms contributing to the 1994 Rwandan genocide. The plausible causes which may have led to the escalation of conflict in Rwanda during the 1990's will be discussed. However, a key concept which seemed to lack further analysis when discussing the origin of conflict in Rwanda was the "why" aspect. As my research discusses, there has been similar causal mechanisms outlined and prevalent among various case studies in Africa. Therefore, an imperative question to ask is: Why has the intensity of violence differed between certain African countries that share the existence of similar causal factors? Specifically, I focus on the effectiveness of Belgian colonialism as a contributing factor to the Rwandan genocide and the lack of legitimacy of primordial classification (traditional and static claims depicting similar characteristics which are shared among groups and people). I compare the effects of these possible causes by analyzing the case studies of Rwanda, Burundi, and the Democratic Republic of Congo, in an attempt to explain the differences in the levels of violence witnessed in all three countries which were significantly affected by Belgian colonialism and ethnic classifications of people.

We Are the World: The Rise of "World Music"

Presenter: Elizabeth Woods, French and Music

Due to globalization we live in a global culture which includes sharing and creating genres of music. "World music" is a phenomenon that began in the 80s. This genre, amongst other things, blends popular Western musical characteristics with non-Western musics which has rejuvenated popular music in the West. However, the term "world music" is difficult to grapple. "World music" cannot be described as a

genre completely outside of the Euro-American mainstream. The music of our global culture is largely thought to be dominated by the cultural imperialism of the West. Nevertheless, this model does not encompass the extent of the control 'foreign' musical aspects of the "world music" genre are exerting on Western popular culture. Therefore, the co-option of "world music" by the West is being reversed. The popularity of "world music" is rising in Western popular culture. There are increasing amounts of "world music" resources becoming available and the "classicization of world music" is apparent in various trends. While "world music" depends on Western markets, these markets are dependent on non-Western music to diversify and provide products displaying the lack of control the West has on the genre it created. The roles have been reversed and "world music" is in the process of co-opting Western popular music.

Other People's Problems: Missing Women, Murderers, and the Media

Presenter: Anna Cameron, Political Studies
Faculty Supporter: Dr. Abigail Bakan, Political Studies

There are over 600 missing and murdered aboriginal women across Canada. A long history of systemic racism has made these women extremely vulnerable to violent crimes. Most of their fates remain a mystery, but some murderers have been caught who are responsible for their deaths. I examined the news articles that cover the crimes of convicted murderers Robert Pickton and John Martin Crawford. Of the two, only Pickton is very well known. However, while the media covered his crimes extensively, much of the coverage is misleading. The aboriginality of the victims is downplayed, and other tactics are used to blame the victims and focus on the killer. The coverage surrounding John Martin Crawford uses similar misleading strategies, although there is significantly less of it. I argue that because the aboriginality of the victims was emphasized instead of downplayed in the coverage of Crawford's murders, there was less interest in the cases. Most people will read about crimes when they can identify with the victims. While most of Pickton's victims were aboriginal, the number of victims was so enormous and the details of the case were so grisly, that the aboriginality was downplayed to attract the attention that these other aspects gave the case. Crawford's victims were all aboriginal women, but he killed fewer and was not seen as a threat. The media influences how people think about society. If the media continues to treat these types of crimes in this way, the ideas that fuel these crimes will also continue.

Session IX: Eco-control on Change and Difference I

Speaker's Corner, Queen's Learning Commons, Stauffer Library
Friday, March 8, 12:30-2:30
Moderator: TBA

The Harmful Effects of the *Cygnus olor* Population on the Biodiversity of the Presqu'ile Provincial Park Wetland Ecosystem

Presenters: Nathan Surkan, Biochemistry; Caroline Scott; Kirsten Sjonnesen; Benjamin Toffelmire
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

Presqu'ile Provincial Park in Southeastern Ontario is a major attraction for campers and outdoor enthusiasts year-round. At the forefront of the Park's popularity is its rich biodiversity, supported by a variety of unique ecosystems. A particular ecosystem of interest, the park's wetland, is one of the largest along Lake Ontario. However, working with a Biodiversity Specialist from Ontario Parks, we have identified a major issue that has threatened to upset the delicate balance of this ecosystem. Recently, large colonies of *Cygnus olor*, more commonly known as the mute swan, have begun to nest in the wetland area. This species is extremely territorial and the swans exhibit aggressive behavior towards

other species inhabiting the same niche. The main consequence from this territorial behavior is that previously common waterfowl species no longer nest in the wetland. Unfortunately, once *C. olor* nest in a particular area, dislodging the swan population is very challenging. Using available data from peer-reviewed journals, popular media, Ontario Parks and the Ministry of Natural Resources, our group hopes to analyze the current situation, to identify possible root causes, and to develop viable methods of *C. olor* population control, in order to restore the wetland's natural biodiversity. Our seminar will provide a detailed discussion of results from our analysis as well as evaluate potential solutions towards controlling the increasing populations of *C. olor*. We endeavour to provide future measures that may be implemented to preserve Presqu'ile Provincial Park's biodiversity and that have potential applications on a global scale.

Is Competition for Soil Resources by *Carex pensylvanica* Restricting Tree Seedling Growth in a Temperate Northern Hardwood Forest?

Presenter: Raeya Jackiw, Environmental Studies
Faculty Supporter: Dr. Paul Grogan, Biology

In response to ecological disturbances, sedge species like *Carex pensylvanica* form dense monocultures on the forest floor. These "sedge mats" have been shown to severely inhibit plant growth, and limit understory species diversity. In recent years, concern has grown that they may also be restricting the regeneration of economically valuable tree species like sugar maple through belowground competition. To determine if and how *Carex pensylvanica* may be impacting tree seedling growth through belowground competition I located and exclosed 44 tree seedlings in areas of representatively dense sedge at two forest sites at the Queen's University Biological Station. I removed sedge from half the plots, and measured soil resource availability and seedling growth response at all plots throughout the growing season. I predicted that sedge would negatively impact the growth of tree seedlings by decreasing the availability of soil resources. I found that the presence of sedge did not affect seedling growth over one growing season, but that it did impact soil resource availability by increasing the availability of surface soil moisture and decreasing the availability of soil nitrate, changes which may have implications for seedling growth beyond the single growing season studied. My results were also site specific, indicating that location is important when managing sedge impact on tree regeneration. Understanding the impact of sedge on tree seedling regeneration is important for predicting changes in the trajectory of forest communities and for informing the management of economically valuable species like sugar maple.

Regional Dispersal Influences Zooplankton Community Response to *Dreissena polymopha* Invasion

Presenter: Katrina Furlanetto, Biology
Faculty Supporter: Dr. Shelley Arnott, Biology

Aquatic systems are becoming increasingly susceptible to invasive species whereby local species are reduced in abundance and richness leading to changes in many food webs. Dispersal of species from surrounding lakes may provide a natural mechanism to increase local resistance by providing a diversity of locally adapted species to colonize affected communities. This study examined how zooplankton dispersal could potentially reduce the effects of the invasive zebra mussel, *Dreissena polymorpha,* on zooplankton community total abundance, species richness and diversity. Field experiments were conducted in 20 large tanks, with five replicates, to observe zooplankton community response to (1) the presence and absence of zebra mussels, and (2) the presence and absence of regional disperser zooplankton. Live regional zooplankton, from six surrounding lakes, were added fortnightly to dispersal treatments, while heat-killed zooplankton were added to no-dispersal treatments. All tanks were sampled for chlorophyll and zooplankton community samples prior to dispersal additions. Zooplankton

were counted and identified as cladocerans and copepods (macrozooplankton), and rotifers (microzooplankton) to species. In the presence of mussels, chlorophyll was significantly depleted, reducing nutrient availability. All zooplankton richness and abundance decreased suggesting strong resource competition and direct predation by mussels. Dispersal did not affect macrozooplankton community structure, however, dispersal influenced the effect of zebra mussels on rotifers, further decreasing richness. This suggests species from the surrounding lakes may be highly competitive among local species, further proposing that regional species may influence zooplankton community structure and responses to zebra mussel invasion, but the effect is species dependent.

Do Closely Related Species Influence Each Other's Sexual Size Dimorphism?

Presenter: Chloe Boynton, Biology
Faculty Supporter: Dr. Paul Martin, Biology

Size differences between males and females (sexual size dimorphism) are often seen in a variety of species. In birds of prey in particular, a phenomenon occurs where the female is larger than the male. One of the main hypotheses attempting to explain sexual size dimorphism in birds of prey is that the female and male differ in size to partition resources, like prey. There is also evidence that predator and prey body size are correlated, so predators of similar size may be in direct competition. It has been shown that when two closely related species interact in the same area, they are likely to be in competition for similar resources, like prey. This study is looking at sexual size dimorphism and closely related species interactions, which has never been looked at before in birds of prey. I am using the subfamily Buteoninae (Buteo Hawks) as my focal group. I will be using sexual size dimorphism ratios, estimates of genetic distance between closely related species and proportion of range overlap between different closely related lineages within the subfamily. I am expecting to see that if species are closely related and inhabit the same area they will have a decreased sexual size dimorphism. This is because both species are likely to be competing for the same resources, and to avoid competition the species will diverge in body size from one another. This will cause the male and female of each species to converge in size, reducing their sexual size dimorphism.

Understanding Color Polymorphism in the Sea Star, *Pisaster ochraceus*, Through Activity Levels and Dietary Preference

Presenter: Jamie McDevitt-Irwin, Biology
Faculty Supporter: Dr. Bruce Tufts, Biology

Color polymorphism is found in a wide array of organisms ranging from copepods to black bears. *Pisaster ochraceus*, an intertidal sea star on the North Pacific West Coast, shows a striking color polymorphism including a range of orange, brown, maroon, and purple. *Pisaster* shows extensive geographic color variation, with >95% frequency of bright purple *Pisaster* in the Vancouver region; while the open pacific coast has a frequency distribution of 6-28% orange, 68-90% reddish-brown to dull purple, and a small percentage of bright purple. Maintenance of color polymorphism remains unknown, but one hypothesis suggests an underlying genetic component with regional-scale variation controlled by an ecological factor. Two ecological factors suggested are diet and salinity. This study analyzes the differences in dietary preference and activity levels between the color morphs in Bamfield, British Columbia. *Pisaster* was binned into two colors, orange and purple, for statistical analysis. Feeding laboratory trials showed no preference between the color morphs for *Mytilus edilus* or *Mytilus californianus.* Self-righting trials were performed in a low (20 psu) and controlled (35 psu) salinity and no significant difference was found between the color morphs. Interestingly, the activity levels of orange color morphs were not significantly different between low and control salinity. The results suggest there are ecological differences between the color morphs that still need to be evaluated.

Evaluating the Genetic Structure of *Camissoniopsis cheiranthifolia* in California Dune Restorations

Presenter: John Viengkone, Biology
Faculty Supporter: Dr. Christopher G. Eckert, Biology

Habitat loss and fragmentation is considered the largest cause of decreasing biodiversity. Previously, preservation was the main method of mitigating the human impact; however, with decreasing pristine habits, there has been a shift towards ecological restoration. The California coastal dunes have been the sites of many restorations. One native species that has been planted in restorations is the iconic beach evening primrose (*Camissoniopsis cheiranthifolia*). With a distinct floral variation across its range, *C. cheiranthifolia* seeds must be carefully sourced when restoring dunes. But has it? I evaluated 22 restored site and 12 natural sites by collecting tissue samples, floral measurements, and fruit counts. Using DNA and floral markers, it is possible to determine whether large flowers from the south have been planted in the north or vice versa. The DNA markers can even determine if individuals of the same flower size have been used outside of their populations. I used fruit counts as an indicator of fitness, which will allow me to be able to determine whether restorations using non-local plants are detrimental to the plants' well-being. I expect to find mismatches in both DNA and floral markers in restoration sites compared to local natural sites accompanied by a decrease in fitness. Hopefully, the results of this study will allow for stricter regulations on sourcing of restoration material.

Session X: Leadership & Motivation

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Friday, March 8, 1:00-3:00
Moderator: TBA

Contagion in the European Union: An Analysis of the Channels of Transmission

Presenter: Richard Macklem, Economics
Faculty Supporter: Dr. David Longworth, Economics

This study analyzes contagion from the global financial crisis that began in August 2007 to the European Union (EU) crisis and uses a statistical approach to determine which channels were, and still are, important for contagion transmission in the European crisis. A logit regression is used to statistically determine which common contagion channels - trade linkages, the common creditor, portfolio investors and macroeconomic fundamentals – transmitted infection among the 27 EU countries. The results show that the macroeconomic fundamentals channel is the most important channel and specifically high levels of government and private debt along with a large current account deficit are the most important determinants of contagion. Additionally, the results suggest that the European crisis is at root a balance of payments crisis. Finally, the results predict that the country, beyond those that have already received assistance form the EU, ECB and IMF, that is most vulnerable to further contagion is Malta.

Effects of Perceived Organizational Support and Leader Member Exchange on Individual Risk Taking

Presenter: Julie Weatherhead, Commerce
Faculty Supporter: Dr. Kate Rowbotham, Business

People's relationships with their organization and their managers have significant effects on their work and their workplace attitudes. In this paper we look at the relationship between perceived organizational support (POS), leader member exchange (LMX), and risk taking. Workers with high levels of POS and

LMX have more organizational commitment, have lower absenteeism and turnover rates, and exhibit more citizenship behaviour. We hypothesize that the higher the level of POS and LMX the more likely a person will be to take constructive versus destructive risk. Constructive risk is defined as risk involved in innovation and creativity, and is therefore desirable for organizations. This paper also looks at the links between Perceived Organizational Support and Leader Member Exchange, and at which of these factors is more influential on risk taking. This will allow organizations to best allocate their time and energy on initiatives linked to raising POS and LMX to get the highest return. This paper reflects initial findings of three separate studies looking at POS, LMX and risk taking.

Developing the Upcoming Generation of Leaders in the Workplace

Presenter: Ruhee Ismail-Teja, Psychology

This project is designed to understand the different generations coexisting in the workplace and create recommendations for corporate leadership on most effectively managing and developing leadership competencies in the younger generation. This investigation, examined through secondary sources and interviews with 20-35 year-olds, provides insight on the tools upcoming leaders need in order to build on current corporate success. Current research from psychology and business journals, and publications released by consulting companies and other sources was consolidated to evaluate the status of the workforce given the recent generational spread. Interviews were conducted with twelve employees and consultants from various industries in Calgary to understand their workplace values, definition of effective leadership, career aspirations, and views on their needs from current employers. Gen Yer's and Traditionalists want to learn from one another in order to combine skills and strengths. This learning should take the form of both structured and informal mentorship as well as 360-degree feedback. The incoming generation wants a company to invest in them, which many companies are reluctant towards because they accurately believe Gen Xer's and Yer's have less longevity. The paradox lies in the reality that this generation is drawn to an environment in which their capacity for learning and opportunities are extensive. They are eager to build their careers with a company that helps them access a range of experiences, understand the 'big picture', and fosters challenging and meaningful work. Younger workers expect a culture of transparency, teams over hierarchies, respect for personal life, and trust.

Gender and Peacekeeping

Presenter: Kelly Whiting, History

A major challenge for contemporary military policy makers has been the integration of gender into policy. Since 2000, Canada has opened all military roles (including combat and naval ones) to women. This includes Canadian participation in peacekeeping operations (PKO), an essential part of the national identity. From Lester B. Pearson's work with the United Nations during the Suez crisis to missions in Haiti, Cyprus and Bosnia, Canada has been a part of multilateral operations to support peaceful resolution of conflicts throughout the 20th and 21st centuries. Tens of thousands of Canadians have served in over 40 peacekeeping and peace support operations since the 1960s (Veterans Affairs Canada, 2011, 2012). Despite the freedom to participate, women still constitute a significant minority of Canadian and UN peacekeeping forces. Yet, the nature of PKO and the roles Canadians play today has changed significantly since the end of the Cold War. The impact of armed conflict on women has dramatically increased and the violation of women's rights has become a focal point in most modern conflicts. Due to the changes in conflicts and the role of a peacekeeper, the integration of gender into all aspects of peacekeeping operations would significantly increase their operational effectiveness. I will begin by explaining the types of modern peacekeeping operations, defining the concept of gender and discussing how operational effectiveness of peacekeeping is measured. Utilizing this definition of operational effectiveness, this presentation will explore how the inclusion of gender will increase operational effectiveness from two perspectives – that of the peacekeeper and that of the victim.

An Analysis of Queen's University Students' Participation in Student-Run Development Projects

Presenter: Mira Dineen, Global Development Studies

Young Canadians have access to a wealth of opportunities to participate in short-term development projects within developing regions in Canada and around the world. These projects include voluntourism, ecotourism, academic exchanges at educational institutions abroad, research projects, religious missions, internships, and short-term development initiatives organized by student-run campus organizations. Although there are numerous studies that examine gap year projects or short-term development projects, there are currently no studies of young Canadian university students' involvement in short-term development projects through student-run organizations. This study seeks to explore young Canadian adults' motivations to participate in short-term development projects, how participants in short-term development projects imagine themselves as agents of development, and what short-term development projects are teaching participants. Individual interviews were conducted with young Canadian adults between 18 and 24 years old who participated in a short-term development project between 2008 and 2011. Participants were recruited from two student-run development organizations at Queen's and all projects lasted between six weeks and three months. This study draws on development theorists such as Edward Said, Barbara Heron, Kate Simpson, and Rebecca Tiessen, to frame and examine participants' responses. This study finds that young Canadian development workers draw motivation, justification, and imagined identities as agents of development from a complex interface between whiteness, gender, colonialism, Orientalism, and morality. This study concludes that a short-term development work is dominated by a simplistic narrative that depoliticizes development and identifies concepts produced and reinforced by this narrative. Further, this study identifies needs and recommends opportunities for future research.

Conceptual Blending in Theatrical Performance

Presenter: Kelsey Jacobson, Drama
Supporting Faculty: Dr. Jenn Stephenson, Drama

This project will be an examination of the potentialities of using conceptual blending to describe the cognitive processing that occurs when audience members engage in a theatrical event. Specifically, it will frame the processes using the play *White Rabbit Red Rabbit* by Nassim Soleimanpour, which itself examines the multiplicities of mental spaces required to engage in performance. In this project, I hope to examine conceptual blending and its relation to theatre, especially metatheatre, in which audience members must balance several levels of performance and reality in one theatrical event. There has been research conducted into relating blending theories with semantics, semiotics, and literature, in particular in the realm of metaphor in which a reader must maintain both the original and analogy in the same mental space in order to draw the comparison. The move towards theatre follows logically, as it encourages audiences to view a performance of fiction or imagination while balancing the 'real' quality of the actors, set pieces, or even words and story, as in verbatim and documentary performance, respectively. Considering these ideas, my core questions can be grouped around three main ideas: How does conceptual blending function when watching theatrical performance, specifically *White Rabbit Red Rabbit*? What specific moments in the script, performance, or audience experience in *White Rabbit Red Rabbit* prompt conceptual blending, or challenge our usual conceptual blending process? What implications are there for the use of conceptual blending or cognitive science in theatre for shaping audience perception?

Session XI: Words and Language

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Friday, March 8, 2:45-4:45
Moderator: TBA

Word-Level Stress Is to Decoding as Phrase-Level Stress Is to Reading Comprehension: A Study of Prosodic Influence in Children's Reading Development

Presenter: Martha Palm-Leis, Psychology
Research Supervisor: Dr. Lesly Wade-Woolley, Education

This study aims to determine how the use of prosody in spoken language can effect reading development and later, reading ability as an adult. Research shows that individuals who can identify which syllables or words are emphasized within a phrase also have more advanced decoding abilities (i.e. are more proficient at translating letters into speech sounds) and have more advanced reading comprehension. To date, there has been little research examining the precise method by which this awareness of emphasis or "stress" at the word-level and the phrase-level uniquely contribute to reading ability. In this study, I predict that adults' word-level stress awareness will be more strongly predictive of their word decoding ability than their reading comprehension. I also postulate that adult's awareness of stress at the phrase-level will be more predictive of their reading comprehension than decoding, when word-level stress sensitivity is removed from the equation. Eighty students from Queen's University were recruited to participate in two 60-minute interview sessions, during which completed a battery of reading and executive functioning tasks. Multiple regression analyses will be conducted to evaluate the relationship between the measures of interest. The results from this study will benefit elementary school teachers, speech-language pathologists and others working towards providing children with a solid foundation in the spoken language from which their literacy skills can grow. These results may also have important implications for the development of educational programs for individuals with specific reading impairments.

The Effects of Social Environment on Pronouns as a Measure of Self-Awareness

Presenter: Nicole Persall, Psychology

By analyzing the types of words used in people's writing, we can make inferences about the different psychological states individuals may be in. According to previous research, the types of pronouns people express in their language can give information about their focus of attention. Greater use of first person singular pronouns is indicative of higher levels of self-awareness. People's focus of attention can be shifted towards the self by placing a mirror in front of them, or shifted to others by having other people present. This study manipulated levels of self-awareness in individuals, and then measured the pronoun usage in their writing using Linguistic Inquiry and Word Count (LIWC2007). The results showed that the mirror condition displayed a significantly higher frequency of first person pronouns compared to the group condition. These results indicate that an individual setting with a mirror increases self-awareness, and that a group setting with no mirror reduces self-awareness. Researching self-awareness is important because it is a basic trait in humans, and a lack of, or excessive levels of self-awareness may indicate psychological problems, thus it can be applied to the study of mental disorders such as depression and mania.

Initial Accuracy of Word-Referent Mappings Affects Word Learning

Presenter: Elaine Choi, Life Sciences
Faculty Supporter: Dr. Stanka Fitneva, Psychology

It was previously assumed that a correct, or accurate, initial association between a word and its referent

allows optimal language learning, since fewer cognitive resources are required. However, some studies have found that initially incorrect, or inaccurate, associations can cause adults to learn word-referent mappings significantly better, compared to initially accurate ones. The opposite effect was found in children, who typically learn better when a word-referent association is consistently accurate.
Our research project further explores these findings. The study involves a cross-situational word-learning paradigm examining whether the correction of inaccurate initial word-referent associations benefits word learning. Eye fixation and pupil dilation data are used to determine initial mappings and cognitive load, respectively. In the familiarisation phase of the study, participants are presented with associations between made-up words and the images to which the words refer; initial accuracy is manipulated such that only half of the presented associations are correct. Then, in the learning phase, each word is presented with its correct referent. Finally, the accuracy of the learned word-referent mappings is tested. Our initial findings confirm that word learning benefits when adults are presented with initially inaccurate associations and subsequent corrections. We will discuss the theories behind these findings, as well as the implications for language learning. In the most recent phase of the project, we are determining whether pupil dilation is a good measure for increased cognitive load associated with word-referent inaccuracy.

Invisible Languages in Eden Robinson's *Monkey Beach*

Presenter: Sofie Bedard, English
Faculty Supporter: Dr. Petra Fachinger, English

Language in *Monkey Beach* is vital in delineating roles of "insider" and "outsider" within the text. Lisamarie Hill's inability to speak the Haisla language as fluently as her grandmother, Ma-ma-oo, always endorsed, isolates her from being able to fully understand her Haisla roots. As Ma-ma-oo says: "... to really understand the old stories, you had to speak Haisla" (211). Yet, it is also through the matrilineal line that Lisa inherits the role that secures her a position as a Haisla "insider". Lisa inherits her grandmother's and mother's gift of foresight, and an ability to speak to spirits and the dead. She inherits the language of the old stories, those that by Ma-ma-oo's logic are unutterable in English. The language of the dead is an invisible language because it is inviolate by colonial forces and it functions outside of Western epistemology, but also because the text itself is written in English. Thus the mainstream reader becomes the "outsider", denied access to the language of the spirit world, receiving instead an inadequate English translation. The narrative emphasizes the impotence of English translation earlier in the text, noting that: "Haisla has many sounds that don't exist in English, so it is not possible to spell the words using English conventions" (193). Translational failure becomes manifest in the spelling of Haisla words using transliteration, which become physically fragmented by apostrophes and point to the problems of translation, and to ultimately undermine the task of translating Haisla culture into the "Western" medium of the novel.

I Am Not the Best of Witnesses: (Anti-)Narrative Voice in Alice Munro's "Home"

Presenter: Sophie Palmer, English
Faculty Supporter: Dr. Tracy Ware, English

The *New York Times* recently called Canadian author Alice Munro "one of the greatest short story writers not just of our time but of any time." Munro, who was born in Huron County in 1931, still lives in the region and has set much of her work in the area, writing with nuanced depth and accuracy that has led the publishing and literary world to affectionately refer to the region as "Alice Munro Country." Over the course of her career, Munro has typically first published her short stories in magazine venues, such as the *New Yorker*, and every four or so years, collected these stories into book form. The story "Home," first published in 1974 is a rare exception; it was originally published in a more obscure source, with Munro stating that it was "sort of a final statement" about her "dissatisfaction with art." Yet a revised form of this story resurfaced in 2006 when it was published in Munro's semi-autobiographical book *The View from*

Castle Rock, a collection of stories that in a characteristically postmodern fashion, blurs the boundaries among the genres of memoir, history, and fiction. I will discuss why "Home," and its peculiar publication history, highlight larger themes within Alice Munro's work: her portrayals of ambivalence towards family and "home" itself; her self-consciousness with regards to writing fiction that is at the same time about places, people, and history from the "real" world; and how these anxieties have shaped her writing style over time.

Session XII: Eco-control on Change and Difference II

Stauffer Library 121, Queen's Learning Commons, Stauffer Library
Friday, March 8, 3:15-5:00
Moderator: TBA

Insect Herbivory on the Plant *Rhinanthus minor* over its Elevational Range in the Canadian Rockies

Presenter: Lindsey Falk , Biology
Faculty Supporter: Dr. Chris Eckert, Biology

All species of plants and animals occur over a finite area of the Earth's surface. This is referred to as the species range, and many species ranges have shifted or are predicted to shift with climate change. Scientific models have predicted how these shifts are expected to change and what proportion of the implicated species will go extinct in the process. Most models assume that climatic variables such as temperature and rainfall are solely responsible for these range shifts. However, we know that the success of a species is strongly influenced by both their positive and negative interactions with other species, such as competition, mutualism, predation and herbivory. But how these biotic factors affect species ranges is poorly understood. I am using a field experiment on a species in its native habitat to better understand these interactions. My study took place in the Canadian Rocky Mountains on populations of the plant Yellow Rattle (*Rhinanthus minor*). I studied two transects, each with plant populations at low, mid and high elevations. Insect herbivory on plant populations was observed, as well as manipulated, via a pesticide treatment to reduce insect herbivory, and a clipping treatment to simulate natural insect herbivory. Understanding herbivory and herbivore-plant interactions over an elevational gradient may help give us a clearer idea of the complex relationship between the climatic and biotic factors that affect plant species ranges.

Assessment of Road Mortality in the Spotted Turtle (*Clemmys guttata*)

Presenters: Andrew Shacker, Biology; Nick Scrivens; Jason Tupper; Katherine Witherspoon
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

The Spotted Turtle (*Clemmy guttata*), a small freshwater turtle species, prefer shallow wetland habitats, and are restricted to eastern North America, predominantly in southern Ontario along the southern shores of the Great Lakes. However, the Spotted Turtle has been classified as 'vulnerable' (a species of special concern) by COSEWIC since 1991, owing to the 35% decline of the population throughout the past century. This is primarily of concern regarding reductions of ecosystem biodiversity, and further anthropogenic pressures will drive the species towards further endangerment. High rates of road mortality are considered a key actor in facilitating a decline in the Spotted Turtle population. A study by Ashley and Robinson (1996) found that approximately 25% of annual Spotted Turtle deaths are a direct result of roadway incidents, around the Long Point Causeway, bordering Lake Erie. By utilizing data from Long Point, the extent of road mortality of the Spotted Turtle will be characterized by analyzing the proportions of deaths in high-density versus low-density roadways. There is varied response to the

effectiveness of various solutions to minimize road mortality, including a vegetation management approach boarding roadways, subterranean passages, barriers along roadsides, and influencing and informing in decision-making processes. With the Sandy Pines Wildlife Center, Napanee, reductions in roadway mortality rates will decline along the 401 by increasing both public and private sector awareness regarding the issue of Spotted Turtle road mortality. Recommendations to communities and government entities will be made to facilitate the improvement of the status of Spotted Turtle.

Impact of Major Highways on the Wildlife Population in Kingston and Frontenac County

Presenters: Paige Robinson, Biology; Gavin McLaughlin; Michael O'Meara; Hilary Ouellette

Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

Over the past five years, there has been an abundance of interest concerning the ecological effects of major Ontario highways on the habitats and ecosystems of many wildlife populations. The primary concern with multilane, high-traffic freeways is that they typically divide existing habitats into relatively isolated zones. Consequently, this separates individuals within a population from other members of the same population, and also excludes access to many natural resources. The majority of the resultant issues for wildlife fall under three main categories; the collision based mortalities of organisms and the consequences on local residents, the halting of gene flow amongst the wildlife populations, and the physical intrusion and/or noise pollution adversely affecting the quality of habitat for local species. Based on these concerning issues, it is crucial for a sustainable solution to be developed and implemented in appropriate areas within Kingston and the surrounding Frontenac County. Our approach involves an extensive literature review, which will assist us in observing similar problems around the globe, as well as various solutions that have been executed to fix these said problems. Furthermore, we will conduct a thorough investigation of local organizations' existing studies to obtain relevant data and statistics which will assist us in determining the effects high-traffic freeways have on the surrounding ecological environment. It is through this research that we hope to present valid findings on the multilane highways impact to local ecosystems and landscapes, as well as produce possible planning options for intervention and suggest key areas for further examination.

The Chimney Swift - A Flying Ace

Presenters: Kierney Leach, Environmental Studies; Stephanie Fong; Vanessa Hrvatin; Victoria Law; Tegan McWhirter

Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies and Biology

The chimney swift (*Chaetura pelagica*) is a bird, which commonly nests in chimneys in eastern North America. Unfortunately, the International Union for the Conservation of Nature changed the chimney swift's status to Near Threatened in 2010. Chimney swifts historically nested in hollow trees. However their ancient summer migratory nesting habitat has been compromised by vast infrastructural development, forcing them to live in brick chimneys. The number of suitable sites has continued to decline due to destruction and capping of chimneys, and the smaller number of houses being built with chimneys. Kingston is one of the main summer migratory nesting areas for chimney swifts, making it an essential area for this threatened species. For this project we will be working with Christopher Grooms who volunteers with the Kingston Field Naturalists and has done research on the chimney swifts. Currently, fake chimneys have been constructed in Kingston buildings to re-create a nesting home for the species. Thus, we will study the effectiveness of this current solution with the goal of further developing and improving ideas that can be used to protect the species. We plan to educate the public on this issue by hosting an awareness event with the help of our entities. It is our hope that by the end of this project we will have come up with a feasible, long term solution to the nesting issue, and that the entities we

have worked with will work on implementing our solutions into the Kingston area, and eventually into other communities.

An Evaluation of Microbial Contamination in Ontario Beach Waters: qPCR Vercus Culture for Enterococcus

Presenter: Ashlee Rachel Woolfson, Biomedical and Molecular Sciences
Faculty Supporter: Dr. Anna Majury, Biomedical and Molecular Sciences

Contamination in recreational beach water is currently assessed using culture-based measurements of fecal indicator bacteria, a process that requires eighteen to twenty-four hours, from the time of sample collection until results can be released (Converse 2012). Due to the fluctuating nature of microbial contamination, data obtained twenty-four hours later are barely pertinent, and decisions regarding beach closure must be made on outdated information. To avoid this lag, real time polymerase chain reaction (qPCR) has been suggested as an alternate testing method, since it directly measures the genetic material in a sample, and thus can reduce lag time to about three to four hours (Ferretti 2010). The major concern of using qPCR is that the value obtained is a measure of DNA in a sample, and, even though the value can be compared to the amount of DNA in one cell, there may be DNA in the sample that should not be counted towards the total, such as DNA from dead organisms (Haugland 2005). This paper focuses on samples collected during the summer of 2012 from Outlet Beach and Bath Filtration Plant in Kingston, Ontario. DNA was extracted from the samples and subjected to qPCR. The amount of DNA was then compared to a known amount of DNA in calibrator cells. This calculated calibrator cell equivalent value can then be compared to the colony forming unit value, as determined by membrane filtration. Through statistical analysis, a relationship can then be found between the two related values.

POSTER PRESENTATIONS

Session XIII: Poster Presentations

Queen's Learning Commons, Stauffer Library
Presenters will be present at posters Friday, March 8, 11:30-1:00
Posters will be on view March 7 & 8

1. Why Did the Turtle Cross the Road?

Presenters: Sukaina Afzal, Biology; Ayooluwa Adurogbangba; Meghan Arteaga; Meghan Borland; Sara Byres
Faculty Supporter: Dr. Gabriela Ibarguchi, Biology, Environmental Studies

Road ecology studies are beneficial for informing sustainable development plans. Our ecological focus lies in developing crossing structures at five sites in the Kingston area to enable safe turtle crossing during the breeding season from May-September. Locations have been selected based on previous evidence of animal casualties and the potential for culvert construction. The Kingston Society of Conservation Biology hopes to implement a solution, over the course of 3-5 years that has commenced with the installation of turtle crossing signs at all locations and will be completed once culverts are constructed. We will investigate the success of culvert development by other conservation groups in order to determine if this is a viable solution for the four sites being investigated in this study. Our group will propose adjustments to culvert construction and alternate, feasible solutions where conventional culvert development is expected to be ineffective in reducing turtle mortality. This study aims to ensure that culverts will be effective in increasing the safe transfer of turtles between wetland areas. Ultimately, we hope to propose a long-term sustainable solution that will decrease the effects of anthropogenic activities and urbanization on the Kingston turtle population.

2. Blown Away: the Impact of the Wolfe Island Wind Turbines on Local Bat Populations

Presenters: Victoria Attridge, Biology; Nicolle Bonar; Christina Butz; Celeste Connell; Rachel Curtis
Faculty Supporter: Dr. Gabriela Ibarguchi, Biology, Environmental Studies

This study was undertaken in order to explore the extent of migratory bat fatalities and assess the ecological impact stemming from the Wolfe Island wind facility near Kingston, Ontario. As the Wolfe Island wind project is the second largest wind farm in Canada, our research and proposed solutions may bridge the gap between local interests in reducing bat mortality and maximizing energy production. Additionally, bat populations are critical to local agriculture; increased mortality could lead to significant agricultural losses as well as potential impacts on components of the bats' food web. First, information will be gathered, through the use of peer-reviewed journal articles and news items to support our project focus, to assess the magnitude of local bat population change following the construction of wind turbines on Wolfe Island. Further, we will explore the consequences of bat population decline on the local Kingston area ecosystem. Lastly, possible realistic solutions will be investigated in order to lessen the environmental impact of the existing wind turbines, and possibly to alter future policy regarding turbine construction and location. Preliminary results will be presented and discussed with the appropriate representatives from local and provincial bodies relevant to wind energy, environmental policy and conservation efforts.

3. Local and Landscape-Scale Variables Influencing the Use of Ponds by Wood Frogs (*Lithobates sylvaticus*) in the Shakwak Valley, Yukon

Presenter: Lucas Brehaut, Environmental Sciences

A global decline in amphibian population numbers has generated a large body of research focused on amphibian habitat selection and species diversity conservation. The purpose of this study was to analyze the significance of both local and landscape-scale variables on wood frog (*Lithobates sylvaticus*) pond habitat selection in the Shakwak Trench in Yukon, Canada. Presence or absence of wood frogs was used to determine pond occurrence values for 40 different ponds. Independent local variables were collected in the field and through the use of Geographic Information Systems (GIS). Landscape variables were derived with GIS and were analyzed under a 1000m buffer around the perimeter of the study ponds. Pond perimeter and dominant perimeter vegetation were significant local variables. Small ponds with a dominant sedge vegetation types seemed to be selected over larger ponds. Large lake area in the landscape buffers had a significant negative relationship for wood frog habitat selection. Significant variables in this study are similar to those in previous studies or can be linked to other important variables such as pond hydroperiod and total forested area. Results should be considered to act as preliminary findings in a much more comprehensive and complete future amphibian habitat selection study of the area.

4. The Impacts of Deer Overabundance in Kingston Forest Ecosystems and Surrounding Areas

Presenters: Colleen Burliuk, Biology; Michael Berman; Mahadev Bhalla; Bernard Burgesson; Georgia Cairns

Faculty Supporter: Dr. Gabriela Ibarguchi, Biology, Environmental Studies

White-tailed deer are generalists who can adapt to a wide variety of habitats from temperate forests to the open prairies. As a keystone species, they play a critical role in maintaining the structure of an ecological community (Rawinski, 2008). Despite record harvests in recent years, deer populations are at all-time highs around the Kingston region. Foraging deer consume or destroy the seedlings of highly preferred species, reducing plant diversity and on occasion, creating near monocultures. The objective is to analyze the impacts of white-tailed deer overabundance on vegetation within an urban forest ecosystem around Kingston, Ontario. This involves evaluating past, present, and future mitigation efforts in order to remediate the areas affected by overgrazing to ensure long term environmental sustainability. Critical to our evaluation on white-tailed deer in Kingston forest communities, we will be examining the ecosystems trophic relationships in the area including herbivory and selection pressures. Why have deer become so numerous? How are they affecting forest ecosystems? And why should landowners, forest managers, and the general public be concerned? After evaluating the current situation, we aim to propose a viable solution that will address the primary concerns highlighted above. In conclusion of our research we hope to restore the vegetative community and biodiversity of our local forests to their original state.

5. Creating a Master Plan for Parrot's Bay Conservation Area

Presenters: Amelia Corrigan, Environmental Biology; Michelle Bienkowski; Jessica Buttery; Terri Clark; Kaitlyn Cyr

Faculty Supporter: Dr. Gabriela Ibarguchi, Biology, Environmental Studies

Over the past 20 years the Cataraqui Region Conservation Authority (CRCA) has been purchasing the area surrounding Parrot's Bay in hopes to conserve wildlife habitat. By collaborating with CRCA, our aim is to gain insight through research of the surrounding area and examination of case studies from other

conservation areas, to create the most effective conservation plan for Parrot's Bay. The goal is to minimize the negative impacts of recreational trails and activities on wildlife within the conservation area. Such impacts include the disruption of migratory patterns, the relocation of animals into the area and fragmentation of habitat due to trail location. By identifying key species and their migration patterns within Parrot's Bay we will design a plan that will cater to the species inhabiting the land while minimizing the anthropogenic effects on the natural habitats. Another key factor in the design of Parrot's Bay is the issue of urban sprawl, which is very prevalent in this region. Our project will seek to minimize the effects of urban sprawl on the conservation area through the use of land planning and management policies. The outcome we hope to achieve is the formation of a master plan for Parrot's Bay, to link all acquired land in order to prioritize and manage wildlife species most effectively.

6. Investigating the Societal Impacts of Direct-to-Consumer Genetic Testing, and its Relationship to Mortality Salience, Attraction to Legacy and Attraction to Leisure

Presenter: Laura Crimi, Biology
Faculty Supporter: Dr. Lonnie Aarssen, Biology

Homo sapiens are the only species that are aware that one's life is impermanent, and that responds to that awareness with anxiety. Adaptive anxiety buffers include delusion through 'legacy drive' and 'leisure drive', which have been proposed as fundamental components in defining the evolutionary roots of human nature and sociocultural evolution. This study evaluates how legacy and leisure drive are impacted by mortality salience and ideas of genetic testing, and analyzes advancements in genomic technology and its societal implications. In this project, indicators of variation in legacy drive and leisure drive, due to mortality salience and genetic testing priming, were assessed based on participant responses (n=1449) from faculty and students at Queen's University in an online survey. Direct-to-consumer personal genome testing is poised to usher in a new era of medicine through empowering individuals to learn and understand their own genetic make-up. Behavioural changes between sexes were evaluated in terms of Darwinian theory. This was assessed in conjunction with domains of legacy and connected with participant responses to recent and expanding opportunities for genomic testing—including in the context of so-called 'designer babies—with potential for playing a role in modulating the evolution of humans both biologically and culturally. Results will be used to test for relationships between variation in demographic/gender traits and preferences associated with mortality awareness, and domains of legacy and leisure. Preliminary investigation reveals that mortality salience is positively correlated with both leisure and legacy drive. Further analysis of results will be presented at the conference.

7. Effects of Farming in Biodiversity

Presenters: Laura Gerencser, Environmental Science; Aice Domalik; Emma Gunn; Peter Karakashian; Netalie SuBin Kim
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Recent shifts in agricultural practices to become more intensive have led to habitat degradation and the displacement of native flora and fauna, reducing the biodiversity associated with farmlands. Biodiversity is important for the health of the ecosystem in the affected area and our project aims to investigate modern agricultural practices to determine which aspects are responsible for the decline in biodiversity and what is threatening the recovery of endangered species. Direct effects of cultivation practices, indirect effects of pesticide use, and farmers' perspective on the value of wildlife will all be investigated for their potential link to biodiversity declines. By working with the Ontario Federation of Agriculture, and local farmers, we hope to come up with feasible recommendations to improve levels of biodiversity. These recommendations will focus on altering methods of agriculture to increase the diversity of species

on farmland and to help the recovery of species at risk including the birds bobolink, and eastern meadowlark, as well as the milk snake, to name a few. The aim of these recommendations is to not only improve habitat for wildlife, but to provide the farmers involved with beneficial ecosystem services that are more sustainable than current practices. By doing so, the presence of wildlife could be seen as a valuable contribution to their operation, not as a burden to productivity.

8. Does Oxidative Stress Function as a Biomarker of Environmental Mercury Contamination in Double-Crested Cormorant?

Presenter: Laura Gibson, Environmental Toxicology, Environmental Studies
Faculty Supporters: Dr. Linda Campbell, Biology; Dr. Valerie Langlois, Chemistry and Chemical Engineering, Royal Military College of Canada

Mercury is a widespread contaminant that has been shown to induce a wide range of adverse health effects in several animal species including changes in gene expression. This study was undertaken to explore the relationship between environmental mercury exposure and oxidative stress induction in the blood of double-crested cormorants (*Phalacrocorax auritus*). Blood was sampled at five sites across Central and Southern Ontario ranging from low to high risk of mercury contamination and was analyzed for total mercury concentration. To assess cellular oxidative stress, the expression of glutathione peroxidases 1 and 3, glutathione S-transferase µ3, superoxide dismutase 1 and heat-shock protein 70 kd-8 were measured in whole blood samples. Preliminary results indicate that erythrocyte mercury concentrations ranged from 5.0 to 27.3 µg/g dry weight. Mean (± standard error) site-specific erythrocyte mercury concentrations ranged from 9.0 ± 3.6 µg/g dry weight in Lake Erie to 17.5 ± 4.2 µg/g dry weight in Lake Nipissing. Approximately 27% of the birds exceeded the threshold concentration for adverse effects in another piscivorous bird, the common loon (*Gavia immer*). Results of gene expression analysis will be discussed in relation to mercury concentration. Our study will help to develop an understanding of the interactions of environmental mercury exposure and oxidative stress-related gene expression and will contribute to the development of sub lethal biomarkers for mercury toxicity in wild aquatic piscivorous birds.

9. Multiple Perspectives: An Orientation Resource for Queen's Project on International Development Interns Working in Arviat (ᐊᕐᕌᐊᑦ), Nunavut with the Summer Camp Program

Presenters: Tessa Jourdain, Physical and Health Education
Faculty Supporter: Dr. Lucie Lévesque, Kinesiology and Health Studies

In 2011-2012 I was the Site Director for Queen's Project on International Development's (QPID) summer development project in Arviat, Nunavut. The project involves QPID Interns and the Site Director assisting the Arviat community in the coordination of their summer camp program. During my time in Arviat, I collected data from a variety of sources to inform the creation of an orientation resource for future Queen's students working with the summer camp program. I used a blog to document my observations, interactions with the community, daily activities at camp, and the progression of my adjustment and adaptation to my experiences both in the job and in the community. Interns Katie Joyce and Holly Smith contributed information about their thoughts and observations of the community and the camp program. Also, Shirley Tagalik and Wendy Savikataaq, both community members, contributed information on Arviat's history and culture. Three objectives of this resource include: 1) to develop an encompassing orientation resource for QPID Interns consisting of guiding information on all aspects of the project using a variety of perspectives; 2) to provide consistency and sustainability for QPID's involvement through creating knowledge documentation of the project; and 3) to develop and encourage cross cultural knowledge sharing between Arviat and Kingston. As a tool for knowledge sharing that

provides guidance and encourages a growing understanding of the Arviat community, this resource will be given to QPID electronically so that it can be built upon and refined over time.

10. The Golden Eagle - Conservation & Protection in Kingston, Ontario

Presenters: Emma Kanga, Environmental Science; Amelia Douglas; Ashleigh Evelynn; Morgan Ford; Hanna Koposhynska
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

This research project works to analyze and diminish the major threats to the Golden Eagle species through developing efficient and effective conservation techniques and introducing these advancements into the Kingston, Ontario habitat. We propose a partnership with the Kingston Field Naturalists (KFN), a community group with an active mandate in the preservation and conservation of wildlife and natural habitats. Many of their current projects involve at-risk bird species, and they are well equipped to aid in the successful development and implementation of this initiative. There are a few factors that affect the livelihood of Golden Eagles. Wind turbines, pesticides and power lines are some parts of an urban setting that cause disturbance to these creatures. Other vulnerabilities include habitat destruction, limited food availability and human killings to prevent preying on livestock. Some conservation techniques that are successful in managing Golden Eagle populations around the world include the use of bird sensitivity maps and the implementation of adaptive-management frameworks during community planning. Sensitivity maps are formulated taking into account foraging range, collision risk and sensitivity to disturbance (Bright et al., 2008), while adaptive-management frameworks limit recreational activities near known nesting areas (Fackler et al., 2010). By implementing and adapting strategies put in place in countries like Ireland and around the world we hope to reintroduce a sustainable population of Golden Eagles in Ontario, specifically within the Kingston area. This can be achieved through donation of Golden Eagle chicks from areas in Canada in which this bird is common.

11. Mitigation of Wildlife Collision Mortality at Little Cataraqui Creek Wetland

Presenters: Erin Keenan, Environmental Science; Jeffy Henderson; Lauren Malo; Diana Pedersen
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Our research team is concerned with potential reptile and amphibian road mortality through Little Cataraqui Creek wetland along Front Rd. and Bath Rd. in Kingston, Ontario. The coastal marsh is a provincially significant wetland that supports species of migrating and breeding waterfowl, wetland dependent reptiles and amphibians, and may support some of Ontario's threatened turtle species. The coastal wetland also provides a protected nesting area for a migrating species within Lake Ontario. Specific species of turtles, salamanders and frogs will be investigated. Our team will identify general breeding, nesting and migratory behavior patterns of associated wetland species, and establish potential indirect effects on the wetland ecosystem due to population decline. Traffic volume and speed limits of Front Rd. and Bath Rd. at Little Cataraqui Creek Wetland will be identified, and any current wildlife crossing systems in place will be evaluated. Based on this research, our team will establish the significance of wildlife road mortality within Little Cataraqui Creek Wetland at Front Rd. and Bath Rd., and propose suitable mitigation techniques. These techniques may include implementing structural design solutions such as road barriers, culverts, etc., as well as increasing public awareness of wildlife crossing on Bath Rd. and Front Rd. by proposing appropriate traffic laws in the area.
Themes include wetland species breeding and nesting behavior, and urban/traffic development issues surrounding wetland ecosystems.

12. Influence of Reaction Conditions on Polymer Morphology in Fused Silica Capillaries

Presenter: Katherine Langille, Biochemistry

Hydrophobic poly-(benzyl methacrylate-co-1,4 butanediol dimethacrylate) (pBMA) microtubes have been produced through in situ polymerization inside fused silica capillaries. Solvent polarity, reaction temperature and the number of successive polymerization reactions were varied in order to investigate their effect on microtube morphology. It was determined that altering the reaction temperature and solvent polarity enabled control over the degree of tubular morphology, such that the pBMA tubes became more tubular at lower temperatures and in more polar solvents. The thickness of the pBMA tubes increased through multiple successive polymerization reactions. It was determined that pBMA microtube thickness and degree of tubular morphology were controllable, which enables alteration of pBMA tube morphology to optimize their performance in a variety of microscale applications.

13. Mitigating Avian and Bat Mortality at Wolfe Island's Wind Facility

Presenters: Tearney McDermott, Environmental Studies and Religious Studies; Victoria Ehmann; Chelsey McCord; Garrett Morandi

Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

This research focuses on exploring existing mitigation and modification options in order to develop appropriate recommendations to aid TransAlta Corporation in curbing bird and bat mortalities on Wolfe Island. Since the construction and operation of the Wolfe Island wind facility in Frontenac County, Ontario began in 2008, it has contributed to the deaths of many local and migratory birds and bats. While official tallies of avian and bat mortalities to date vary across reports, environmentalist groups and residents alike have expressed concerns for the safety of these species citing the facility's position on a migratory route along the eastern end of Lake Ontario as a key point of contention (Bazillauskas, A. & Yatchew, A., 2011; Blackwell, R., 2012; Dierschke, J et al., 2006). In response, the power company behind the project, TransAlta Corporation, has begun conducting its own investigation into the issue and producing bi-annual monitoring reports of mortalities but has made no significant alterations to their turbines (TransAlta Corporation, 2012). As part of an effort to reduce the direct and indirect effects of the Wolfe Island wind facility on migrating bird and bat species, this report aims to assess the suitability for TransAlta corporation of certain mitigation options such as running turbines on a rotating schedule to account for the high traffic periods throughout the year when species are likely to be most at risk and avoiding the continuous lighting which attracts nocturnal species to the towers.

14. The Greek Crisis: The Internet as the Historians Tool

Presenter: Andrew Marubashi, History

Faculty Supporter: Dr. Eugene Michail, Bader International Study Centre

It has been rightly observed that it will take decades for historians to actually make sense of what happened in world history in 2011. Ultimately, the recentness of any event will determine when a process can be historically analyzed. Even more, there is a lot of discussion on the relationship between history and the Internet, and on histories 'impact' capacity, i.e. its ability to connect with the developments in the wider society. Historians, unlike other disciplines have not utilized the net to service historical study. This research examined the foreign response to the Greek Debt Crisis through looking at the net as a primary source of historical information; looking at the net as a tool in generating further historical information (similar to Oral History). This was achieved through analyzing blogs, online newspaper articles, embassy websites, online journals and other websites that the Internet had to offer. The findings of the research facilitated the creation of multiple timelines based on threats, projections, and a general history. In addition, the research also served as a methodological experiment. Fundamentally, the

research concluded that the Internet could be used as a primary source as well as a supplementary source in dealing with a recent event. Moreover it pushed the boundaries of historical distance in historiography.

15. The Neural Basis of Eating Disorders and Potential Neurobiological and Psychotherapeutic Treatments in Young Adults

Presenter: Jaudat Masood, Biology

Although the prevalence of eating disorders (anorexia nervosa, bulimia nervosa and binge eating) has increased among young adults - affecting women ten times more than men - a complete understanding of its underlying neural basis has yet to be reached. A common misconception is that these disorders stem from a superficial emphasis on food and weight, when actually environmental stressors coupled with neurobiological predispositions are major contributing factors to these compulsive, impulsive and sensation-seeking behaviors. This review presents a comprehensive look at theories on the neurobiological causes and effects of eating disorders: regulation of brain serotonin levels on mood and food intake, hypothalamic control of eating and weight, the allocentric lock hypothesis and finally similarities between the neurobiology of addiction and eating disorders. Understanding the pathology of the disorder may help elucidate why, despite achieving cognitive awareness of the disorder, treatment is difficult due to a disconnect between the neural factors controlling the disorder and a subsequent behavioral change. Why does cognitive awareness of their disorder not translate into a behavioral change? If the contributing neurobiological factors influencing the onset and persistence of the disorder can be understood, a multi-disciplinary treatment involving neuropharmacological and socio-emotional components could be implemented. The application of this research could be important for post-secondary institutions where environmental pressures and personal predispositions of individuals may align to onset eating-disorder behavior. Future studies on the physiology of eating and stress regulation and psychotherapeutic research may help develop treatments to target individuals at many stages of the disorder.

16. The Impacts of Road Salting on Wildlife in Kingston, Ontario

Presenters: Liam Murphy, Biology; Courtney Primeau; Marissa Robinson; Natalie Rook

Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

The cold icy winter climate of Kingston is dangerous for driving commuters and can be treacherous for pedestrians. To prevent slippery conditions, roads are often salted using a basic sodium chloride mixture which has been shown in many studies to be detrimental to wildlife. Generally, policy makers and governing bodies have fought harder to ensure the safety of human lives over those of plants and animals – decisions that have caused road salting to continue for many years. We believe that the harmful impacts on the environment are numerous and should no longer be overlooked by the decision makers. In response to this problem, we are confident that there are solutions that can be implemented which can protect the livelihood of humans in the winter and reduce the negative impacts that are being forced on the environment. For example, using environmentally friendly alternatives such as sand and EcoTraction may have significant impacts on the conservation of wildlife throughout Eastern Ontario.

17. The State of Belle Park

Presenters: Garnet Peters, Geography; Nadene Oliver; Sean Oswald; Howard Rosenblat

Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Our group used the Belle Park Golf course, located at 713 Montreal Street, as our project site. The course is located on top of a pre-existing dump that served as the city's waste disposal site between the early

1950's until 1974, it still shows signs of leachate seepage. The wildlife issue we explored is the effect of this leachate on the surrounding ecosystem, including tree species, fish and mammals. We researched case studies in similar situations that have been done in the past as a base for our understanding. The community entity are working with is the Environment Division of the City of Kingston, in charge of monitoring the hybrid poplar trees planted along the fairways. They are used as a means to extract contaminants from the soil, based on their proven ability for rapid growth. We will evaluate the effectiveness of this technique along with the vertical leachate extraction wells on site. Also, our group hopes to obtain the history of the water sample data that is collected from monitoring wells around the site for our analyses and interpretation. The latest budget information shows that the golf course lost $203,000 last year. This has prompted city council to reconsider the future of the property and open the doors for new innovative ideas. As part of our project we hope to come up with a sustainable solution that preserves the natural habitat and serves the community, such as a park.

18. Controlling Purple Loosestrife Populations in the Kingston and Surrounding Areas

Presenters: Keenan Randall, Environmental Science; Ty Greene; Melissa Lee; Carlyn McNabb
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Purple loosestrife (*Lythrum salicaria*) is an invasive plant species that has affected agriculture and wildlife across Canada. The weed is not native to Canada; however in municipalities like Kingston and the surrounding area, it has caused tangible problems. We will strive to engage a government partner (City of Kingston), community organization (ON Invasive Species Awareness Program), and a local resident throughout the completion of our research and regarding the viability of solutions proposed.
First, we will examine the origins of the plant in Canada, emphasizing the reproductive characteristics that make the purple loosestrife a powerfully invasive species. Next, we will analyze the impact of the purple loosestrife from three perspectives: (1) the impact on native plant communities; (2) the impact on native animal communities; (3) the impact on human life. We will then evaluate current bio management controls, as utilized by other governments, such as the introduction of another foreign species as a control agent. Specifically, we will examine the potential control systems using the following criteria: (1) ability to control the invasive species; (2) feasibility and cost; and (3) direct and indirect negative impacts. Finally, we will propose a comprehensive strategy for each organization moving forward, allowing for increased community collaboration and, ideally, the elimination and/or control of the invasive species.

19. Anti-Angiogenic Therapy for Endometriosis

Presenter: Privia Randhawa, Biomedical and Molecular Sciences
Faculty Supporter: Dr. Chandra Tayade, Biomedical and Molecular Sciences

Endometriosis is a gynecological disease affecting 10 to 15% women. The disease is characterized by the growth of endometrium (lining of the uterus) outside of the uterine cavity. Women affected by this condition can experience symptoms that include pelvic pain, irregular bleeding, and infertility. One of the key requirements for endometriotic lesions to survive is to develop a blood supply to support their growth. Our laboratory is investigating mechanisms of how endometriotic lesions establish their blood supply and how neo-angiogenesis is regulated by endothelial and hematopoietic progenitor cells. Results from our laboratory showed that stromal cell derived factor-1 plays an important role in the recruitment of endothelial progenitor cells. Blocking of SDF-1 in a mouse model of endometriosis resulted in reduced lesion growth and survival. Studies are in progress to evaluate safety and efficacy of anti-angiogenic peptide, ABT-898, in an immunodeficient mouse model of endometriosis.

20. Fishy Business

Presenters: Tara Russell, Biology; Rachel Selwyn; Katarina Simcisko; Alexandra Ternosky; Kai Wong
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Anthropocentric activities have led to unsustainable populations of various fish species around the world today. We have increased our cultivation rates to manage our own growing population sizes at the expense of fish species. As a result, fish stocks around the world are in decline and the fishing industry today is pushing them to the point of collapse. Although many people would like to believe that their grocery stores are stocking their shelves with fish from sustainable sources, that is not always the case, and the general population is lacking the knowledge to make informed choices when purchasing fish. We aim to assess the types of fish, their sources, and the information provided to consumers about the fish in grocery stores of the Queen's student area. We will work closely with Food Basics, Metro, John's Deli, and Loblaw's. After assessing these stores we will inform the public on which grocery stores have the best practices, and also inform the stores on ways in which they can change to include information for consumers on the sources and methods of obtaining the fish sold in their stores. We would like to be able to provide the public with labels indicating where the fish was caught, how it was caught, whether it was farmed or fished, and whether it was sustainably sourced. We will implement a consistent format in all of the stores and raise awareness in Kingston about the issues facing the fishing industry and how our choices can impact fish species.

21. Invasion of Asian Carp in the Great Lakes

Presenters: Kassandra Smrekar, Geological Sciences; Shingo Tanaka; Lavie Williams
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

A recent threat posed to the Great Lakes and adjoining waterways is the Asian Carp. This large bodied fish originated from Asia and was first imported to the North American between 1960 to 1970. Their migration northward through the Mississippi River eliminated native freshwater species through competition of habitat and food resources. It is imperative to focus on the potential invasion of the Asian Carp because the risk assessment is high that the carp would eliminate all native species. Currently the carp are at the border of entering Lake Michigan, which would then provide access to the rest of the freshwater regions in the surrounding area. Ultimately, the loss of lake biodiversity is the fundamental problem and is coupled with economic issues. Bowfin Environmental Consulting INC and various invasive species awareness programs have been utilized to provide guidance on undertaking a project that involves an aggressive invasive species. The challenge faced will be to determine a method in which to prevent the invasion of Asian Carp. Examining their migration patterns, importation laws of live fish, and the policies of invasive species, will provide insight on the approach that should be taken to eliminate the threat of Asian Carp. It is also important to analyze which native species are most susceptible to becoming extinct. Overall, the intention is not only to increase government, scientific, and public awareness of this issue, but also to provide methods that can be implemented to prevent and eradicate the spread of Asian Carp in North American waterways.

22. Environmental Degradation in the Pursuit of Profit: Evaluation of Solar Panel Installation at the Queen's University Biological Station and its Impact on Wildlife and Research

Presenters: Mark Szenteczki, Biology; Megan Rueckwald; Anna Serdetchnaia; Sarah Trick; Diana Zeng
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Queen's University intends to install a 10 megawatt ground-mounted solar photovoltaic array on 80-110 acres of Queen's University Biological Station (QUBS) land. The installation is proposed for Bracken Tract, a QUBS property that is an important habitat and breeding area to several threatened populations. For instance, certain bird populations inhabiting Bracken Tract have been the focus of numerous long-term studies, some of which are ongoing. The QUBS portion of the proposed solar project will account for ~90% of the solar energy Queen's University anticipates producing. The project is expected to generate 2.5-4.7 million dollars in annual revenue under a Feed-In-Tariff pricing schedule. This not only provides a long-term financial profit, but also reaffirms Queen's University as a national leader with a commitment to sustainability. Despite the additional revenue and contribution to the Queen's Carbon Management Strategy, the proposed project will require the disruption of natural habitats and associated research. Combined with a lack of financial benefit to QUBS, this project has the potential to depreciate QUBS' unique presence in the research community. This analysis will use environmental assessment tools, consult with stakeholders, and perform a comprehensive literature review, in order to identify and resolve potential issues with the proposed solar project. Mitigation strategies and possible solutions will be explored – such as bird relocation plans or alternate solar farm layouts – to abate anticipated problems as well as ensure the proposed solar farm is environmentally sustainable and financially responsible.

23. Constitutively Active Signal Transducer and Activator of Transcription-3; an Oncogene that Increases Gap Junctional, Intercellular Communication

Presenter: Aaron Trotman-Grant, Biomedical and Molecular Sciences
Faculty Supporter: Dr. Leda Raptis, Biomedical and Molecular Sciences

Gap junctions are specialized intercellular channels that connect the cytoplasm of adjacent cells and mediate the direct exchange of small ions and molecules between them. Gap junctional intercellular communication (GJIC) is usually blocked, or down regulated, in cells transformed by oncogenes, such as Src. One of the Src effector pathways leading to transformation and GJIC suppression is the Ras/Raf/MEK/ERK pathway that has a prominent etiological role in cell proliferation, differentiation and cell survival; inhibition of this pathway in vSrc transformed cells restores GJIC. In addition, the distinct downstream effector of Src that is obligatory for neoplasia is the signal transducer and activator of transcription-3 (Stat3). Stat3 is up regulated in a range of tumors, and a modified version, the constitutively active form of Stat3 (Stat3C), has been shown to function as an oncogene. To examine the role of Stat3 upon the Src-mediated, GJIC suppression, Stat3 was down regulated in rat liver epithelial T51B cells expressing activated Src. The extent of GJIC was determined by the migration of the fluorescent dye, Lucifer Yellow, through adherent cells subsequent to electroporation. The results demonstrate that, contrary to inhibition of the Ras pathway, Stat3 inhibition in cells expressing activated Src does not restore GJIC. On the contrary, Stat3 inhibition in normal cells with high GJIC levels eliminated junctional permeability. Interestingly, our results also demonstrate that expression of Stat3C T51B cells and human lung cancer SK-LuCi6 cells, which have extensive communication and low Src levels, increased GJIC. Therefore, Stat3 is actually required for and increases junctional permeability.

24. Exploring the Changing Demographics of the Corporate Spouse

Presenter: Julie Weatherhead, Commerce
Faculty Supporter: Dr. Kate Rowbotham, Business

This research explores the historic perspectives of corporate spouses, current gender ideology, and draws on the Canadian Labour Force Survey to explore the changing demographics of corporate spouses. Through time, the cultural image of a corporate spouse has remained fairly constant, with women acting in a supportive role as their husbands, the heads of the household and primary sources of income, go off to work. The impact of corporate spouses on an organization has long been recognized, but the role of the corporate spouse has changed with a broadened definition and expanding impact. Corporate spouses today include men and women, they include people who work outside the home and those who stay home, they include people with children and those without, and they include couples with a broad spectrum of income levels. The impact corporate spouses have on organizations are still substantial and they can be both positive and negative, reflecting the realities of the modern day workplace and relationships. The current work serves as a starting point for research leading to a better understanding of the role of corporate spouses, reflecting current organizational and societal realities.

25. Snapping Turtle Conservation in Ontario

Presenters: Rachel Wilson, Biology; Payal Samuel; Molly Teather; Leslie Usher; Jake Windsor
Faculty Supporter: Dr. Gabriela Ibarguchi, Environmental Studies

Populations of snapping turtles are declining in Ontario. These reptiles play essential roles in wetland habitats through removal of dead animals and weeds, and their eggs provide food sources for mammals and birds. Despite being listed as a species of special concern under Ontario's Endangered Species Act, hunting of snapping turtles is permitted in some regions of Ontario. Snapping turtles are further threatened by pollution, road mortality, and habitat loss. The developmental process of this species also acts as an obstacle to their recovery, as sexual maturity is not reached until the age of 16-19 and only 7 out of 10,000 eggs is expected to survive to adulthood. With the assistance of contacts at the Suzuki Foundation, Guelph University, and other institutions, we intend to develop a conservation strategy for snapping turtles that consists of four components. First, we recommend a government-mandated, province-wide survey of snapping turtle statistics to determine turtle populations and threats. Then we will address whether sustainable hunting is possible. The current catch allowance of two turtles per person daily, as deemed sustainable by the MNR, should be suspended until further review. Next, barriers to recovery will be addressed. Prevention of threats could be achieved through conservation area designations, signs indicating turtle presence, information on how to avoid causing turtle injury and distribution of information to persons whose property contains snapping turtle habitat. Finally, increasing public awareness of snapping turtle demographics is crucial to our strategy. Education through multiple channels will generate public interest and funding.

26. Investigating the Role of Neuropeptide Y Infusions to the Ventral Hippocampus in Mediating Defensive Burying Behavior in Rats in the Shock-Probe Test

Presenter: Samuel Yoon, Psychology

The current study will investigate the role of NPY in the ventral hippocampus in anxiety. NPY is a neuropeptide found in many structures in the brain, including the hippocampus, and is implicated in regulation of anxiety related behaviors. The hippocampus has also been found to play a role in anxiety and defensive behaviors – specifically, the ventral hippocampus regulates innate defensive behaviors. The effect of NPY in the ventral hippocampus will be investigated by infusing either NPY (n=12) or physiological saline (n=12) into the rat ventral hippocampus followed by behavioural testing in an animal

model of anxiety; i.e., the shock-probe burying task. I expect to find a selective reduction in burying duration in NPY-infused rats.

27. Low Frequency Ultrasound Imaging of Apoptosis in Tumor Response: Non-Invasive Monitoring of Chemotherapy Effects

Presenter: Stephanie Zhou, Life Sciences
Faculty Supporter: Dr. Gregory J. Czarnota (Faculty at University of Toronto)

Due to the growing costs of chemotherapy, previous imaging techniques such as MRI or CT scans have become too time-consuming in the assessment of chemotherapy's effects. With results generated about 2 weeks later, the patient is exposed to the negative side effects of these medications with the possibility that chemotherapy may not be improving their prognosis. Thus, ultrasound has become increasingly popular as a method to determine chemotherapy's effect on tumors within 24 hours. Both low and high-frequency ultrasound are novel, noninvasive methods for detecting cell death based on changes in cell morphology. Condensation, fragmentation and alterations in the cell nucleus during apoptosis are linked to changes in the cell's acoustic properties, as indicated by experimental evidence. In this study, quantitative ultrasound was used to follow responses of tumor models to chemotherapy in vivo. As studies have shown that structural changes can occur as early as 24 hours after treatment, ultrasound imaging was administered before and 24 hours after treatment. Changes in ultrasound parameters such as spectral slope, Y-intercept, and midband fit were analyzed relative to pretreatment control data and when compared to changes in the tumors seen through cell staining, changes consistent with cell death were observed.

28. The Nose Knows: A Sensual Analysis of Paradise Lost and His Dark Materials

Presenter: Sam Zimmerman, English
Faculty Supporter: Dr. Shelley King, English

Both John Milton's *Paradise Lost* and Philip Pullman's retelling of the story, *His Dark Materials*, use scent imagery in descriptions of morally significant characters. But what is the significance of the consistent scent imagery? Hans J. Rindisbacher's theory in *The Smell of Books: A Cultural-Historical Study of Olfactory Perception in Literature* (1992) states that scent imagery, in literature pertaining to Christian symbolism, indicates a dichotomy of morality. This theory is modified to illustrate that scent is used to signify a character's condition of knowledge. The presence of good scent in *Paradise Lost* indicates that a character possesses pure knowledge of good and evil, the presence of bad scent indicates a character's corrupt condition of knowledge of good and evil. Alternatively, the presence of good scent in His Dark Materials signifies that a character possesses pure self-knowledge, whereas the presence of bad scent indicates the corruption of a character's self-knowledge. Furthermore, the attribution of neutral scent or lack of scent imagery to morally significant characters, such as Satan and Mrs. Coulter, signifies the morally ambiguous actions which make these characters difficult to define as virtuous or evil. The analysis of the scent imagery in *Paradise Lost* and *His Dark Materials* demonstrates the significance of scent theory in the research and analysis of literature, as a possible method of evaluating a character's moral status.

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