Non-Lethal Diet Analysis of the Puget Sound Rockfish, *Sebastes emphaeus* in the San Juan Island Channel
Kendra Baird, Senior, Environmental Science, UW Tacoma
Mary Gates Scholar, Undergraduate Research Conference Travel Awardee
Nate Thomas (Nate) Fuchs, Junior, Aquatic & Fishery Sciences
Mary Gates Scholar
Mentor: Emily Carrington, Biology
Mentor: Kevin Turner, Biology

*Sebastes emphaeus* is an important food source in the food web of the San Juan Channel. Understanding how *S. emphaeus* interacts with other members of the community is important in understanding the entire structure of the community of the San Juan Channel. We took a non lethal approach to sampling the stomach contents of the fish using gastric lavage. We found that *S. emphaeus* is feeding primarily on pelagic organisms, with copepods constituting 85% of their total diet, despite the fact that they are frequently seen on the seafloor bottom. Our findings corresponded well with past research on the diet of *S. emphaeus*, which used lethal methods. Our non lethal approach was successful and can be reproduced for future research.

Staying Connected Families: Adapting an Evidence-Based Prevention Program for Use with Foster Families
Emma Lewis (Emma) Sherman, Junior, Social Welfare
Mentor: Kevin Haggerty, School of Social Work
Mentor: Heather Storer Smith, Social Work, Partners For Our Children
Mentor: Susan Barkan, Social Work, Partners For Our Children

There is a dearth of evidence-based parenting supports for foster families caring for adolescent children, and research has shown that foster youth are at particularly high risk of drug use, early pregnancy, and involvement in the criminal justice system (Collins & Spencer, 2010; Courtney & Dworsky, 2006). Staying Connected with Your Teen is an evidence-based, self-administered parenting program providing families with tools to support their adolescent children in avoiding high-risk behaviors. This prevention program has been found to reduce initiation into substance abuse, risky sexual behavior and violence among teens. The Social Development Research Group and Partners for Our Children are collaborating to determine program adaptations needed for Staying Connected to be effective with families involved in the foster care system. Building off of Wingood and DiClemente’s (2008) “ADAPT-ITT” model, the research team will go through eight phases to most effectively solicit and test program modifications. Currently the research project will focus on the first “ADAPT-ITT” phase—assessing the feasibility of adapting the program through the use of focus groups. Focus groups will be conducted with young adults who were in residential foster care placements during their adolescence, foster parents, and Children’s Administration staff. Based on feedback from focus groups, the program will be modified to meet the unique needs of foster families. Due to cost-effectiveness and evidence-based outcomes, an adaptation of Staying Connected has the potential to serve as a valuable tool to promote the healthy development of foster youth. This presentation will focus on the process of collaborating with Children’s Administration, conducting focus groups with three different populations, and evaluating any findings about the process of adaptation for use with foster families thus far.

**SESSION 1E**

**SHAPING HUMAN BEHAVIOR: INTERACTIONS OF COGNITION AND SOCIAL CONTEXT**

Session Moderator: Judith A Howard, Sociology
Mary Gates Hall 234
1:00 PM to 2:30 PM

* Note: Titles in order of presentation.

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The dual pathway model of bulimia nervosa suggests that both negative affect and dieting lead to binge eating behavior. Both pathways are proposed to reflect either failures in self-regulation (i.e. dieting) or attempts at self-regulation (i.e. negative affect). Moreover, individual differences in self-regulation have been implicated as a risk factor for bulimic symptoms. More specifically, negative urgency, which is defined as the tendency to act impulsively when experiencing negative affect, has been most effectively associated with bulimic symptoms. However, no research has attempted to investigate whether individual differences in negative urgency alter how the self-regulatory pathways of the dual pathway model relate to binge eating behavior. We tested this hypothesis using a mixed observational-experimental design across two studies of college women (Study 1: n = 300, Study 2: n = 75). Results from the cross-sectional data analyses from Study 1 indicated that negative urgency moderated the effects of both dieting and negative affect on binge eating symptoms such that the effects of dieting on binge eating were stronger among individuals high in negative urgency while those of negative affect were weakened. Results from Study 1 suggest that individual differences in negative urgency act to simultaneously amplify and dampen other self-regulatory pathways leading to binge eating. Study 2 investigated the effects of food consumption after an experimentally induced negative mood. Although data collection is ongoing, analyses will test whether negative urgency predicts higher food consumption following negative mood induction. Results from Study 2 will provide an experimental test of the findings of Study 1 to demonstrate whether negative urgency enhances or protects against potential problematic eating behaviors in the face of negative mood. Overall, results suggest that interventions that target enhancing emotional self-regulation may be particularly effective in the treatment or prevention of binge eating.

**SESSION 1H**

**AQUATIC FOOD CHAIN ECOLOGY**

*Session Moderator: Frieda B. Taub, Aquatic & Fishery Science*

*Mary Gates Hall 251*

1:00 PM to 2:30 PM

*Note: Titles in order of presentation.*

**Effects of the Red Sea Urchin on Benthic Invertebrate Communities: A Link to Spatial Subsidies**

*Ross Douglas (Ross) Whippo, Senior, Aquatic & Fishery Sciences*

*Mary Gates Scholar*

*Mentor: Kevin Britton-Simmons, Friday Harbor Laboratories*

Spatial subsidies are fluxes of organic material from one habitat to another and are important in many ecosystems, including the subtidal zone of the San Juan archipelago. The red urchin (*Strongylocentrotus franciscanus*) is a ubiquitous member of the San Juan marine community ranging from the shallow subtidal to depths greater than 100m. Despite the absence of attached algae on which to feed in the deep subtidal located below the photic zone, red urchins are quite common in these habitats. They are able to subsist primarily on detrital seaweeds captured from the water column using their spines. Red urchins are known to be strong interactors in shallow algal habitats, but very little is known about interactions between urchins and the surrounding community in the deep subtidal. These urchins are large (up to 20cm test diameter), move very little, and extensive field observations suggest that the presence of urchins dramatically alters the benthic invertebrate community. This study tested the hypothesis that the spatial subsidy of detrital macroalgae in the San Juan archipelago has an indirect effect on benthic invertebrate community structure in the deep subtidal zone, mediated by the red sea urchin. This was accomplished through the use of underwater photography pairing invertebrate communities underneath and adjacent to (control) randomly selected urchins in the deep subtidal zone. Visual analysis of the photographs identified organisms to the finest taxonomic level possible and percent cover calculations of organisms observed were then processed to describe statistical differences between communities with and without urchins. Further study is aimed at understanding the mechanism (consumption vs. spine abrasion) by which urchins alter these communities. This work will increase our ecological understanding of deep subtidal environments in the Pacific Northwest and help deepen our understanding of the complex, indirect pathways through which spatial subsidies can alter biological communities.

**POSTER SESSION 2**

**Commons West, Easel 91**

2:30 PM to 3:30 PM

**Premeditation as a Moderator Within the Prototype/Willingness Model: Evidence for a Reasoned and Reactive Path**

*Matthew Gregory Vaughn, Senior, Psychology, Economics*

*Mentor: Kevin King, Psychology*

Research has suggested two different approaches to behavior
initiation; reasoned and reactive behavior. For example, substance use can occur as a result of a plan to use or as an unplanned, reactive event. At the same time, individuals differ in their tendencies to engage in planned or reactive behavior. This has been previously called a lack of premeditation, or forethought, and poor premeditation itself has been linked to alcohol use. The current study examined how individual differences in premeditation may alter how reasoned and reactive behavior pathways may be related to recent alcohol use. We tested how reasons for drinking (i.e., alcohol-related attitudes and subjective norms) and individuals’ prototypes about drinkers were related to expectations to drink and use alcohol in the past month, using ordinary least squares regression, and tested whether premeditation moderated either pathway. Data were collected through an anonymous web-based survey on impulsivity, substance use, and substance use cognitions. The collected sample (n=304) was of college students, with 65.7% female, 51.3% Caucasian, 42.1% Asian American, and a median age of 19. Results indicated that premeditation moderated the effects of subjective norms on both recent alcohol use and expectations to drink in the future, such that individuals who were low on premeditation were more influenced by subjective norms than those high on premeditation. These findings may imply that different sets of cognitions are accessed for both hot and cold emotional states when making decisions about substance use. This has ramifications for prevention programs aimed at reducing drinking through subjective norm beliefs, as our results indicate that the influence of these beliefs differ depending on personality characteristics.

**POSTER SESSION 2**

MGH 242, Easel 225

2:30 PM to 3:30 PM

**Thermal Modeling and Control for Haptic Devices**

Yuxuan M. (Marta) Wang, Senior, Electrical Engineering
Paul Austin (Paul) Buckley, Senior, Electrical Engineering
Mentor: Blake Hannaford, Electrical Engineering
Mentor: H. Hawkeye King, Electrical Engineering

Electric DC motors that convert electric current to torque are the most common type of actuators used in haptic interfaces. However, high currents necessary to deliver large haptic forces can generate heat in the electromagnetic coils, and in the extreme can cause malfunctions due to overheating. It is therefore necessary to add thermal protection mechanisms to limit the output current. While this is a common feature of haptic devices it is not clear what makes a superior current limiting method or what effect such limits have on haptic psychophysical thresholds, task performance using haptics, or the subjective experience of haptic realism. The current work evaluates three methods for current limiting: limit output to zero, limit output to a safe steady-state current, limit output current in linear proportion to temperature. Using both quantitative and qualitative metrics, these are compared to a control case with no current limit. Human subjects use one finger of a multi-finger haptic device to perform a psychophysical thresholding experiment designed to measure human perception of small haptic effects, while forcing the device to heat up. All methods are shown to effectively regulate temperature and show no statistically significant difference in psychophysical threshold value. Users show a slight preference for the linear method, while the zero output method requires less time spent interacting with current limited conditions.

**SESSION 2R**

**GENES AND PROTEINS IN HUMAN DISEASE**

Session Moderator: Joachim Voss, Biobehavioral Nursing & Health Systems
Johnson Hall 111
3:30 PM to 5:00 PM

A Rare Genomic Duplication Creates a Novel Transcript in DNA Of a Patient with Schizophrenia

Molly Gasperini, Senior, English, Biology (Molecular, Cellular & Developmental)
Mary Gates Scholar
Mentor: Mary-Claire King, Medicine, Genome Sciences
Mentor: Caitlin Rippey, Genome Sciences

Rare, gene-disrupting genomic deletions and duplications – called copy number variants (CNVs) – have been implicated in schizophrenia; however, much remains to be understood about which genes are causative, as well as the genetic and cellular mechanisms involved. We used array Comparative Genomic Hybridization to screen DNA from individuals with schizophrenia for such CNVs. From the rare mutations detected, we focused on one that duplicates the 5’ ends of two genes that lie head-to-head on chromosome 11q22. Both DCUN1D5, a ubiquitin ligase, and DYNC2H1, a dynein active in cilia, are expressed in brain and are plausible candidate genes for schizophrenia. In order to detect and characterize aberrant transcripts resulting from this duplication, we performed next generation sequencing (RNAseq) of total mRNA from lymphoblasts of the patient. We found multiple different transcripts unique to this patient, indicating novel expression and splicing of the genomic sequence now adjacent to the 5’ end of DCUN1D5. PCR and Sanger sequencing confirmed that these novel exons constitute a new 3’ end of the mutant, truncated DCUN1D5. Next we will quantify relative levels of these novel transcripts by cloning and attempt to detect the predicted truncated protein by Western blotting. These data support the role of this mutation in schizophrenia by confirming the presence of aberrant transcripts in the patient’s RNA.
The data also suggest an intriguing mechanism by which a genomic rearrangement can result in a novel, stable transcript via “exonification” of otherwise non-coding sequence.