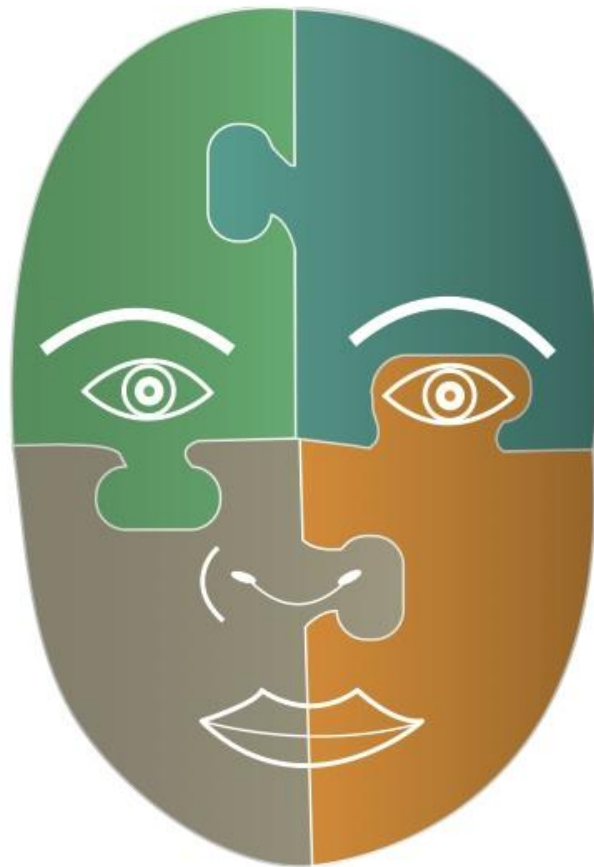


**28<sup>th</sup> Annual Graduate Research Symposium**  
**United in Discovery: The New Face of Research**

**2013 Presentation Abstracts**



Kent Student Center  
Friday, April 19th  
9:00AM – 2:30PM

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# Oral Presentations Session I: 9:00AM – 10:15AM

## *Rising Researchers (KSC Room 303)*

### **9:00AM: The mystery of the double sided-portrait of Sir Christopher Hatton**

Lorianna Clarke

College of the Arts, Kent State University

Portraiture during the Tudor reign of the 16th century became not only essential to the newly ruling family, but also to the wealthy families of the time. Showing likeness and stature, especially for the royals and the highly ranked, was the main purpose of portraiture by portraying the represented individual in a flattering light with symbolism representing his or her accomplishments. During the rule of Elizabeth I, image as text became a phenomenon that was a common form for portrait painting. The idea of image as text entails the “verbalization” of the work through images that tell a story or an instance in the individual’s life. In fact, to further convey the life of the painted individual, the artist would also include actual text within the painting. During the Elizabethan time, viewers of wealth and power were educated in the Classics, hence the readings of the portraits were quite easy. However, the Double-Sided Portrait of Sir Christopher Hatton attributed to the workshop of William Segar in 1581, is a unique portrait that has been quite difficult to interpret. The portrait contains astrology, mythology, religion, extensive Latin, and navigation that has made the painting mysterious in its exact meaning and purpose.

### **9:15AM: An investigation on assets: Specifically the five C’s and positive youth development**

Nicolle Estevez

College of Arts & Sciences, Kent State University

The Project on Human Development in Chicago Neighborhoods (PHDCN) is a large-scale, interdisciplinary study of how certain factors such as: families, schools, and neighborhoods affect youth and adolescent development. Using the Longitudinal Cohort Study from the Project on Human Development in Chicago Neighborhoods (PHDCN), a secondary data analysis was performed to investigate how the environment, family structure, and parenting style affect the Five Cs model of Positive Youth Development. The research question devised was how do one’s environment, family structure, and parenting style affect children’s Five Cs. The Five Cs consists of competence, confidence, connection, character, and caring. The sample consisted of 1,500 randomly selected adolescents, cohorts 12 and 15, and their primary caregivers. Results revealed that the environment, family structure, and parenting style did in fact affect some the Five Cs. The results were further broken down by ethnicity and gender, in which females revealed to be significantly more competent and caring. Hispanics reported to be significantly more caring than other ethnicities, and other ethnicities reported to be significantly more competent and confident. With the results that we acquired we can conclude that positive youth development is affect by one’s family structure, parenting style, and environment.

## *Biology and Social Problems (KSC Room 309)*

### **9:00AM: Public health workforce provisions in the Patient Protection and Affordable Care Act (ACA)**

Eric Hutzell and Neda Kasim  
College of Public Health, Kent State University

Public Health Workforce provisions in the Patient Protection and Affordable Care Act (ACA) are described in Title V: Health Care Workforce. These provisions bring one potential option for addressing in part the growing health care debt of the United States. The objective of this paper is a discussion of sections relating to the Public Health workforce in Title V of the ACA, and implications for the field of Public Health. Special recognition is given to the role of how provisions within Title V of the ACA strengthen the Core Public Health Functions within the Public Health workforce. Taken as a whole, existing studies demonstrate a critical need for Public Health Agencies, lobbyists, and politicians to take action to address the inadequacies of funding needed for implementing Title V. Such actions aimed at increasing Public Health Workforce funding will help the nation reduce healthcare costs, as well as for adequate provision of the essential public health services, i.e., to monitor, diagnose and investigate, inform, educate, mobilize, develop policies and plans, enforce, link, assure, evaluate, and research to prepare the American people for current and future public health issues.

### **9:15AM: Influenza vaccination rates in adults with Chronic Obstructive Pulmonary Disease: The impact of a diagnostic breathing test**

Dana Mowls, Vinay Cheruvu, and Melissa Zullo  
College of Public Health, Kent State University

The purpose of this research was to determine if adults with COPD diagnosed by spirometry were more likely to have influenza vaccination in the past 12 months when compared to those with COPD diagnosed without spirometry. This was a cross-sectional study using data from the 2011 Behavioral Risk Factor Surveillance System. Logistic regression examined the relationship between influenza vaccination in adults with COPD diagnosed with (n=13,607) and without spirometry (n=3,175). Overall, 50% of adults with COPD received influenza vaccination in the past 12 months. Vaccination prevalence was greater in those diagnosed with (53%) compared to those diagnosed without spirometry (36%). In adjusted analysis, adults with spirometry were 56% (95% CI: 1.3, 1.9) more likely to have received influenza vaccination compared to those without spirometry. A diagnostic breathing test for COPD is associated with increased likelihood of having an influenza vaccination in the past 12 months. This may be an indicator of the relationship between knowledge of lung function and the need for preventive care, a sign of quality healthcare, or health-seeking behaviors in patients with COPD. This research is the first to use a nationally representative sample and suggests that spirometry diagnosis of COPD may increase rates of influenza vaccination.

### **9:30AM: The effects of initial hip abduction and external rotation strength, and neuromuscular fatigue of the gluteus medius on the star excursion balance test in male and female healthy subjects**

Meredith Decker

College of Education, Health, and Human Services, Kent State University

Context. The gluteus medius muscle is an essential hip stabilizer during unilateral stance. A weakened or fatigued gluteus medius may be associated with decreases in postural control during dynamic balance. Objective. To determine if initial hip muscular strength and gender affect neuromuscular performance on the Star Excursion Balance Test (SEBT) following fatigue of the hip musculature. Design. Randomized Control Trial. Setting. Laboratory. Participants. 20 male and 20 female recreationally active subjects with no history of lower extremity injury were recruited to participate in this study. Intervention. Subjects were randomized into control and experimental groups. Experimental subjects were placed through separate hip abduction and external rotation fatiguing exercises, followed by the SEBT. Control subjects were not placed through a fatiguing protocol before the SEBT. Main Outcome Measures. Fatigue was assessed with a handheld dynamometer compared to a 43% decrease in peak force compared to baseline measurements. The SEBT was used to determine normalized reach distances during all three sessions. Results. A main effect of time for all subjects was observed (p=0.042). Gender was significant for all subjects, regardless of group (p=0.001). Conclusion. Performance on the SEBT is not affected by fatigue and initial strength of the hip musculature between genders.

### **9:45AM: Online social support behaviors of veterans with PTSD**

McKenzie Pittman and Andrea Meluch  
College of Communication & Information, Kent State University

The purpose of this project is to understand types of social support being communicated in an online support group for veterans with PTSD. Specifically, the objectives of this study are to identify which types of social support (i.e., informational, instrumental, emotional, social network, esteem; Du Pre, 2010) are being exchanged in the support group of interest. According to the Department of Veterans Affairs (2010) every 80 minutes a U.S. veteran commits suicide. Suicide rates have been shown to be higher for veterans diagnosed with a mental disorder (Kang & Bullman, 2008). Together these statistics illustrate the relationship between mental health disorders and suicide, which demonstrates the need for support among those in this population. Messages exchanged in a popular online support group for veterans with PTSD (Yahoo! Groups – Combat Vets with PTSD) between January 1, 2008 and December 21, 2009 will be analyzed by the researchers for social support content quantitatively. The researchers have received approval from the Kent State University IRB and are in the process of data collection and coding. Overall, this research is significant as it will provide insight into how social support is communicated in a computer-mediated context among veterans living with PTSD.

## *Space and Place Part I (KSC Room 310A)*

### **9:00AM: Mountain City rising: Planning centrality in Chongqing, China**

Mihran Kazandjian

College of Arts & Sciences, Kent State University

Chongqing Municipality plays a critical role in the development of western China. This presentation will examine Chongqing's ambitious and, so far, successful plan to create multiple CBDs, divided by function, in its quest to become "Chicago on the Yangtze" and "inland Hong Kong". I will use both official planning documents, including master plans, news releases and detailed urban district plans to lay out the official line. This shall be combined with a change-detection analysis of central Chongqing using remote sensed imagery from the beginning and end of the 2000s. I will round out these view-points with non-official descriptions of Chongqing's changing cityscape, including non-government print media, blogposts and personal observations. This presentation should hopefully provide a clearer understanding of the use of urban planning in China as well as a view of urban development away from the mega-cities of the Chinese coast.

### **9:15AM: A correlation of western Arctic Ocean sedimentation and atmospheric temperature from northern Alaska during the last 2,000 years**

Jeffrey Harrison

College of Arts & Sciences, Kent State University

This study presents a comparison of two high-resolution proxy records from the western Arctic. Direct correlations were made between marine grain size distributions and terrestrial atmospheric climate. To provide for variations in depositional patterns in the Arctic Ocean, grain size composition was measured in a sediment core (HLY02-04 JPC16) from the eastern Chukchi Sea at a higher resolution than previously reported. The piston core, collected on the east flank of Barrow Canyon (72.1555°N, 153.50817°W), preserves a record of local sedimentary variations. A Varimax-rotated Principle Component Analysis was conducted on JPC16. We inferred three principal components of deposition at the core site related to anchor ice, nepheloid flows, and suspension freezing based on downcore variations in grain-size. This interpretation is consistent with previous analysis by Darby et al. (2009). While all components showed increased variability since 200 yr BP, factors related to sea-ice showed the highest positive loadings between 2000-1300 cal yr BP. The high-resolution record of marine sedimentation allowed for direct correlation with the atmospheric climate proxy as recorded by varve thickness in the Brooks Range (Bird et al., 2009). The time interval investigated here shows a significant relationship between sea-ice sedimentation and variability in atmospheric temperatures ( $r = 0.7$ ).

### **9:30AM: Blight around the urban community gardens in the Kinsman neighborhood of Cleveland, Ohio**

Jackie Luke

College of Arts & Sciences, Kent State University

The neighborhood of Kinsman in Cleveland, Ohio is a low income, racially segregated area. The neighborhood is in a food desert, where the residents have reduced access to healthy, fresh food choices. The neighborhood has several urban community gardens, which offer the potential for free, fresh produce to the people participating in the urban community garden. However, the large amount of urban blight, including foreclosed or abandoned homes and debris may discourage the use of the garden. This study examines the blight within walking distance of two of the urban community gardens. Spatial video was taken of the area, and then inserted into ArcGIS to create maps illustrating the spatial patterns of blight in relation to the urban community gardens.

### **9:45AM: Pets as more than people, an examination of human inequality**

Brandon Luke

College of Arts & Sciences, Kent State University

The world finds itself in an odd place. There is a surplus of food, and it is not going where it should. Pet's in many western nations eat meals with more nutritional content than meals to humans in to many less developed nations. In Africa, refugees are given meals that if eaten every day, cause malnutrition. There is a large disconnect between what is given to people that are found "worthy" and to animals people believe to be more important than a fellow human being.

### **10:00AM: Produced water scarcity in Lima, Peru: Prioritization of green space over Barriada neighborhoods**

Rachel Will

College of Arts & Sciences, Kent State University

Lima, Peru is located along the coast of the Atacama Desert where only two percent of the country's usable water resources are located. As urban densification in the city is rapidly increasing, water resources are becoming extremely scarce. Due to inefficient water management and the rapid development of informal, low-cost "barriada" neighborhoods, many citizens do not have access to clean, affordable water despite paying taxes for water services. Although the government has made many attempts at water management reform, the majority of residents living in barriada neighborhoods do not have sufficient access to water. The water disparity is highlighted in contrast to the vast amount of public water services allocated to public green space in the city.

## Health and Wellness Part I (KSC Room 310B)

### **9:00AM: Identifying the best bisymmetric pain measurements to detect the presence of a chronic pain condition among women**

Matthew Reichenbach  
College of Public Health, Kent State University

The purpose of this study was to use pain measurements collected from a standardized physical examination of women reporting severe chronic pain to: 1. Identify unique groupings of pain measurements; 2. Identify subsets of women that have pain that could be classified as the presence of a chronic pain condition; 3. Within each grouping, identify bisymmetric pain measurements among numerous testing sites that best predict the presence of a chronic pain condition. Data were collected on 473 women from the Pelvic Pain Specialty Center at Summa Akron City Hospital. Statistical analyses utilized exploratory factor analysis to identify unique groupings, latent class analysis to identify subsets of women having the presence of a chronic pain condition, and ROC curves to identify the best site pairings that predict the presence of a chronic pain condition. As expected, four groupings of pain measurements were identified: abdominal wall, pelvic floor muscles, internal pelvic organs, and vulvar regions. Each region had subsets of women that could be classified as having or not having a chronic pain condition and bisymmetric pain measurements corresponding to each region were identified that could predict group membership with greater than 91% sensitivity and 87% specificity.

### **9:15AM: Associations between insufficient sleep, health-related quality of life, and life satisfaction among adults with asthma: A mediation model approach**

Lauren Drinkard and Vinay Cheruvu  
College of Public Health, Kent State University

Abnormalities of sleep in adults with asthma may have adverse effects on Health-Related Quality of Life (HRQOL) and can result in reduced life satisfaction. This research examined the effect of insufficient sleep on life dissatisfaction in adults with asthma to determine if HRQOL indicators mediate the effect. Cross-sectional data from 2010 Behavioral Risk Factor Surveillance System involving adults with asthma were used for this study (n = 36,913). Perceived insufficient sleep, the primary exposure of interest, was categorized into two groups. HRQOL constructs measuring poor "self-rated health", "physical health", "mental health",

### **9:30AM: Risk-prone throwing activities and reported arm pain and fatigue in youth baseball pitchers**

Yiyang Liu  
College of Public Health, Kent State University

There is a growing concern on the increased number of throws during a season in youth baseball pitchers, yet few epidemiological studies have correlated the risk-prone throwing activities with arm fatigue and pain. The aim of this study was to examine the relationship between risk-prone throwing activities and reported arm pain and fatigue among youth pitchers in the past 12 months. Cross-sectional survey data of pitching exposure and risk factors associated with arm pain and fatigue were collected in a national sample of 763 baseball pitchers ages 9-18. A total of 502 (65.8%) and 276 (36.2%) pitchers reported arm pain and arm fatigue in the past 12 months, respectively. Pitchers who played teams with no pitching count limits were 1.6 times (95% confidence interval (CI) =1.18, 2.19), or 1.5 times (95%CI=1.11, 2.03) more likely to report arm pain or arm fatigue, respectively, compared to those with pitching count limits. Pitchers who threw curveball were 2.65 (95%CI=1.91, 3.69) and 2.41 (95%CI=1.69, 3.45) times more likely to report arm pain or arm fatigue, respectively. Our findings suggest that risk-prone throwing activities are associated with onset of symptoms that could lead to increased risk of arm injury among youth baseball pitchers.

### **9:45PM: An investigation into the relationship among television consumption, desensitization, and empathy.**

Lindsay Hahn  
Department of Communication Studies, Kent State University

No longer are village elders and literature the only sources of stories that compel consumers to become emotionally and cognitively involved with fictional characters. Rather, technologies such as television, Netflix, and digital video recording allow media consumers to not only become involved with mediated characters, but even feel empathy with them. Coupled with a media-heavy culture, submersing oneself in emotion-inducing narratives may bode well for consumers' entertainment. Constant connections to characters may inhibit viewers' empathic capabilities toward other human beings by way of desensitization. This study examined television consumption as a predictor of empathy in 491 college students at a midsized Midwestern university. Findings suggested that television use does not directly impact empathy. However, increased consumption of crime dramas, situational comedies, and overall television predicted higher desensitization to violent and emotional portrayals, and increased desensitization predicted lower empathy. In addition, men were more desensitized and less empathic than women. By exploring desensitization to nonviolent content, these findings expand upon prior desensitization research which only focused on violence. Limitations to the study are acknowledged, and implications are discussed in terms of attempting to better understand how the increasing time viewers spend immersed in their mediated worlds may impact their real worlds.

**10:00AM: Social media as a means of promoting peer-based learning in design education**

Adina Feigenbaum

College of Communication & Information, Kent State University

Critique is an integral part of design education whereby students review and evaluate projects in order to learn design principles and develop skills like self-evaluation and giving constructive feedback. This study sought to determine points of struggle for students and explore potential benefits of an online design network. Participants included design students and instructors from four Ohio universities and design professionals from Northeast Ohio. Ethnographic research included: observations of design courses, surveys and interviews with students, instructors, and professionals, journal exercises, and a card sort and mock critique with students. Personas were applied to experience models. This study found that students experience difficulty with communication and time-management skills, working with peers, and motivation to learn independently primarily during the initial and final stages of a project. Critique becomes a crutch for some students lacking confidence who often wait for instructor approval, fail to take initiative, self-evaluate, or request feedback. Crit-Chat, an online community of practice for design students, is proposed to help in skill-building, stress reduction, and confidence-boosting to enhance students' learning and motivation. This study outlines the components of Crit-Chat and explores wire-frames requiring testing and further development. Crit-Chat can benefit students throughout their education and career development.

***Geography and Geology Part I (KSC Room 313)***

**9:00AM: Utilizing spatial video data collection in a post-disaster environment: The Joplin tornado of May 22nd 2011**

Adam Cinderich

College of Arts & Sciences, Kent State University

On May 22nd 2011, an EF5 tornado devastated Joplin, Missouri. This paper will concentrate on the recovery after that event, using a fine scale data collection tool to capture spatial patterns of longitudinal neighborhood return. Spatially encoded video will be used to capture visual aspects of building and street change. These video will be coded and analyzed using a spatial filtering approach developed for New Orleans after Hurricane Katrina. Analytical results will be combined with community insights collected simultaneously as a geonarrative during each neighborhood assessment run. The paper will conclude with data collection methods, spatial analyses using a geographic information system (GIS) and a community partnership model transferable to other disaster situations.

**9:15AM: Hypothermia information in the United States: An overview**

Jeremy Spencer

College of Arts & Sciences, Kent State University

Hypothermia is an affliction characterized by a drop in core body temperature. This ailment commonly occurs after exposure to cold ambient conditions, and is a significant source of wintertime morbidity and mortality in the northern mid-latitudes. This presentation is a summary of the author's doctoral research, covering an analysis of internet sources of hypothermia information. Also included is an analysis of US hypothermia deaths by census region, and a comparison to ambient weather conditions.

**9:30AM: Media and peacekeeping in Haiti and the Ivory Coast**

Cadey Korson

College of Arts & Sciences, Kent State University

Since 1948, and the authorization of the deployment of military observers to the Middle East by the Security Council, peacekeeping has played a significant role in the United Nations mission. The relationship between the news media and its audience via the flow of information requires a critical examination, for the impact of the media on peacekeeping missions presents far-reaching ramifications. Perpetuated by the news media, globalized political discourses have become a mechanism that both constrains and directs peacekeeping. Certainly, radio and television broadcasts, as well as newspaper stories, have created a collection of voices that have shaped public views; however, despite the debate that has occurred concerning the media as a manipulator of public perceptions, much remains to be explored. The goal of my research is to examine the ideologies and potential patterns of discourse among news sources. This paper intends to identify meaningful grounded theories by comparing different levels of media and their portrayals, perceptions, and discourses of current United Nations peacekeeping operations and peacekeepers in two former French colonies: Haiti and Côte d'Ivoire.

**9:45AM: Problem of poverty, or poverty of problem? Understanding the concept of poverty**

Jaerin Chung

College of Arts & Sciences, Kent State University

Contemporary public housing is trapped within conceptual contradiction. Public housing policy of the United States of America, since 1933, has aimed to improve the lifestyle of impoverished family group in the most of cities, however, when those areas are gentrified or decided to gentrify, the images of these areas are going back to the former conceptual space, poverty area. This study starts from this question. Even though human has been dedicated so much efforts to improve their living conditions and images, why do we still call those areas as poverty? What is poverty in our society? and how could we approach this geographical context? To catch up this context, this study utilize three major methods, Q-GIS, Interview, and self-conscience diary. This research does not aim to define poverty or even to suggest a solution for poverty. Rather, it will offer an opportunity to understand and discuss the concept of poverty more broadly as a space.

### **10:00AM: Threats to international students**

Steven Walters

College of Education, Health, and Human Services, Kent State University

When the international college student leaves home to live in the United States they are leaving behind their most crucial support systems. Without these support systems the international student faces psychological, sociological and physical challenges that need to be addressed and dealt with to help them adjust to their new home. The reduction of threats to the international student needs to occur prior to their arrival and continue well beyond the initial orientation to their new home utilizing several methods and approaches using family, friends and resources in campus.

### ***Exercise Physiology and Biomedical Sciences Part I (KSC Room 314)***

#### **9:00AM: Initial observations of PCL Sharpey's fiber insertion depth in four species of primate**

Aidan Ruth

College of Arts & Sciences, Kent State University

As body size increases, muscle force increases as well. How do larger animals negotiate the increase in muscle force caused by a larger body size at the site of ligament insertion? Our hypothesis is that larger animals increase the depth of insertion of penetrating collagen (Sharpey's) fibers and/or the "splay" of collagen fibers as they enter the bone. We studied serial histological sections of the PCL insertion sites of four species of primate with widely varying body size: *Leontopithecus rosalia* (620 grams), *Loris tardigradus*, *Eulemur flavifrons*, and *Gorilla gorilla* (180 kg). We compared measurements of bone thickness from within the insertion site to measurements outside of it, and corrected for body size. A ratio of bone thickness comparing the two sites was calculated for each species. In addition, we measured the cross-section of each ligament at mid-point and compared it with the breadth of the ligament insertion site at the bone. Our data demonstrate that insertion depth increases faster than body size. These data contribute to our knowledge of primate comparative anatomy.

#### **9:15AM: The effects of recombinant osteoactivin on signaling pathways in osteoblasts**

Gregory Sondag

College of Arts & Sciences, Kent State University

Osteoactivin (OA) is a type I transmembrane protein (576 amino acids) that stimulates osteoblast differentiation and function. In order to determine a signaling pathway that relates to OA, Western Blot analysis was performed on recombinant OA (rOA) (50 ng/mL) treated osteoblast cells for different signaling molecules. Various signaling molecules including Src, MAPK, AKT, and FAK have been shown to be involved in differentiation and proliferation in bone cells. In this study, we determined Osteoactivin causes phosphorylation of MAPK, AKT, and Src Pathways in MC3T3 osteoblast cells and P38 and FAK phosphorylation in Blk6 Primary Osteoblasts. We believe that these signaling molecules are stimulated through Osteoactivin binding to its receptor CD44; this was confirmed by mass spectroscopy and immunofluorescence. The effects of OA treatment on Cell Proliferation and Survival shows that OA's role in differentiation and function is independent of cell proliferation and survival. Gene expression was also measured in OA treated cells and showed a significant increase in osteoblast transcription factors Runx2 and Osterix, and bone formation markers Osteocalcin (OC) and Type I Collagen (Col1) expression at Days 7 and 14. This shows that the recombinant OA has a significant effect on early stage osteoblast differentiation and function.

#### **9:30AM: Voltage-gated potassium channel currents of binaural hearing neurons in avian sound localization circuit**

William Hamlet

College of Arts & Sciences, Kent State University

In order to determine the location of a sound in horizontal space, specialized neurons in the auditory system compare arrival times of inputs (interaural time differences; ITD) from both ears. In chick, neurons in the nucleus laminaris (NL) compute ITD along a tonotopic axis. In vitro data suggests middle and high characteristic frequency (CF) neurons encode ITD more accurately than low CF neurons. It has been proposed that the presence of strong Kv currents partially explains this observation. The purpose of this work was to further study Kv currents in NL neurons across the tonotopic axis in order to better understand their role.

#### **9:45AM: OA-D peptide enhances bone growth Hilary Stinnett, Fouad M. Moussa, Joseph Miladore, Kimberly Novak, Samir M. Abdelmagid, Faye F. Safadi Department of Anatomy and Neurobiology, Northeast Ohio Medical University**

Hilary Stinnett

College of Biomedical Science, Kent State University

Osteoactivin (OA) is a novel bone anabolic glycoprotein. The secreted form regulates osteoblast differentiation and function. Our previous studies showed that OA plays a role in osteoblast differentiation in vitro. In this study, we examined the effects of OA-derived peptide on bone mass in vivo. Six C57/black-6 mice aged 9 weeks received intra-peritoneal injection of OA-peptide of 5mg/kg for five consecutive days per week for four weeks. Each mouse was weighed daily prior to injections. No toxicity was observed in any of the mice tested. At the end of the injection period, the mice were sacrificed, and bones and sera were collected for micro-CT, histological and ELISA analyses, respectively. Micro-CT analysis revealed ~12% increase in bone volume/tissue volume for the OA injected mice, as well as ~122% increase in cross sectional area, ~98% increase in bone surface area, ~85% increase trabecular number, and ~12% increase in trabecular thickness. These data support the hypothesis that OA is a bone anabolic factor. Further experiments are warranted to investigate the effects of OA peptide on bone strength using biomechanics. These data will also lead to the development of pre-clinical studies where OA-peptide can be used during fracture healing and systemic bone loss.



### **10:00AM: FXR, a novel receptor in bone cell differentiation and function**

Fouad Moussa

College of Arts & Sciences, Kent State University

Farnesoid X receptor (FXR) is a receptor key in maintaining bile acids and cholesterol homeostasis. While it has been known that FXR is expressed in liver, and adipose tissue, its expression in bone are not well understood. In this study, we examined the expression of FXR in bone by qPCR analysis and demonstrated FXR in normal long bone and calvaria. Next, we examined bone mass of FXR KO mice using micro-CT and showed increased bone volume and trabecular thickness in FXR KO compared to WT mice. Survival and proliferation of primary osteoblasts were significantly less in the FXR KO compared to WT. We next examined the effects of FXR agonist (GW4064) on bone cell differentiation. Primary osteoblasts and MC3T3-E1 osteoblast-like cells were treated with GW4064 and differentiated, they demonstrated less alkaline phosphatase staining at day 14 and less matrix mineralization staining at day 21 compared to untreated culture. Osteoclast differentiation of hematopoietic stem cells showed less number of osteoclasts coupled with less TRAP activity in the FXR KO compared to the WT mice. Taken together, these results suggest a functional role of FXR in regulating bone homeostasis.

### **Political Science (KSC Room 315)**

#### **9:00AM: Respondents' lack of knowledge or loyal cue-taking tendencies? Revisiting the Homer gets a tax cut debate**

Kristen Traynor

College of Arts & Sciences, Kent State University

This paper aims to enter into the debate between Bartels (2005, 2007) and Lupia, Levine, Menning, and Sin (2007) about political knowledge and public opinion on the topic of the Bush-era tax cuts. The debate is about whether cue-taking or lack of knowledge determines public opinion on such an issue, but this paper argues that there is actually a more nuanced response. These previous articles neither included an objective measure of political knowledge nor controlled for other determinants of public opinion. This may have skewed the authors' results. Using data from the 2007 Cooperative Congressional Election Study, this analysis intends to examine the effects of partisanship, ideology, and knowledge on respondents' level of support for repealing the Bush-era tax cuts. With all else held equal, it is expected that those with lower knowledge levels will have a greater variance in level of support for a repeal of the tax cuts but that party and ideology will have affected Democrats and liberals more than Republicans and conservatives at all levels of knowledge, given the great deal of rhetoric on the issue.

#### **9:15AM: Where do the gender differences in legislative effectiveness begin? An examination of committee request success and legislative effort in the 93rd - 103rd Congresses**

Lisa Hager

College of Arts & Sciences, Kent State University

This study examines whether receiving a requested committee assignment impacts legislative effort of Representatives within their assigned committees serving at any point during the 93rd - 103rd Congresses. The differences in legislative effort of male and female members based on committee request success will also be examined in an effort to determine the origin of findings that Congresswomen have lower rates of legislative effectiveness than Congressmen. Drawing upon the theoretical arguments and models of distributive politics, party-cartels, mixed-motivations, and bounded rationality, it is hypothesized that receiving a requested committee increases legislative effort. Since majority party members are more likely to be granted committee requests, it is expected that majority party members may experience better success rates with bills referred to their committees and, therefore, exert more legislative effort than minority party members. A variety of hypotheses are derived and tested to determine how members receiving and not receiving a request and members not making a request compare to one another using Frisch and Kelly's (2006) committee assignment data and negative binomial regression analysis. The study will conclude by discussing the results as they relate to representation and public policy outputs.

#### **9:30AM: An evaluation of civil society projects in post-conflict societies**

Alireza Raisi

College of Arts & Sciences, Kent State University

This paper examines civil society projects in post-conflict societies through the method of case study. The study of three cases of Northern Ireland, Bosnia, and Afghanistan shows that civil society development projects generally improve single identity socialization (in-group socialization). However, these projects have not been successful in improving social cohesion and binding the individuals across ethnicities and communities. This fact primarily stems from the lack of enough emphasize on cross community activities from the international community who devises these projects. The international community also does not effectively monitor its requirement on the cross community activities. Another important reason for poor performance of civil society is the remnant hostility between communities from the conflict era and also negative view of local people about the role international community which regards the receiver of donation as foreign mercenary. In addition, civil society projects usually do not target the immediate needs of citizens making them pointless in the eyes of local people. Finally, channeling the civil society projects through the traditional civil society associations such as shuras in Afghanistan and MZs in Bosnia can substantially improve the outcome of these projects.

**9:45AM: Explaining democracy in the former Soviet republics: Is there a resource curse?**

Yeo Jung Yoon

College of Arts & Sciences, Kent State University

The purpose of this paper is exploration of factors that facilitate or hamper democracy in the former soviet republics. To this end, this paper examines the notion of a “resource curse” through statistical testing using the MLE model. Based on the hypothesis that governments which have rich natural resources tend to be anti-democratic and the theoretical framework that states that rich natural resources allow governments to repress their citizens’ democratic aspirations through centralized and institutionalized power which originates from economic benefit, this paper shows the correlation between natural resources and the predicted probability of democracy. To examine the notion of a “resource curse,” the amount of oil rents as a percentage of GDP, the amount of fuel exports and of ore and metals exports as percentages of merchandise exports has been used an explanatory variable in the performance of statistical analysis. It is difficult to answer the question of whether all kinds of natural resources are directly responsible for anti-democratic regimes, however, rich possession of oil does have harmful effects on democracy.

**10:00AM: The influence of the human rights regime on U.S. foreign aid appropriations**

Jessie Rumsey

College of Arts & Sciences, Kent State University

Conventional wisdom says that the post-Cold War, pre-9/11 era was the golden age of the international human rights regime. Some scholars argue that during this period human rights was the dominant organizing moral narrative for international relations; others speculate that September 11th has altered the way the international community, particularly the United States, adheres to human rights norms (McLagan 2003; Foot 2005, 2007). The media encourages the public to think along the same lines (BBC 2002; Cobain 2012). But what if the diffusion of human rights norms during the 1990s was exaggerated? Using the content analysis, this paper seeks to evaluate whether or not the international human rights regime influenced U.S. Senate subcommittee hearings on foreign operations during the five years prior to the September 11th terrorist attacks. The paper asks if the human rights regime manifested in subcommittee hearing discourse during this period and, if so, in what manner. The importance of human rights in international relations has long been debated in the foreign aid literature (McKinley and Little 1977; Poe 1992). This project investigates the effects of the human rights regime at the subcommittee level, during which important decisions regarding foreign aid are reached.

*English (KSC Room 316)*

**9:00AM: “I seek an image, not a book”: Jack B. Yeats visualizing Irish identity**

Heather Brown

College of Arts & Sciences, Kent State University

Using the written word, William Butler Yeats attempted to inspire in factionalized Ireland a national consciousness that would unite the Irish. W.B. Yeats was a prominent figure in the Irish Literary Renaissance, but he was not the only Yeats to inspire the Irish. His brother, Jack Butler Yeats, used visual art to create an Irish identity separate from the English, translating the essence of the Irish character into his work. Though trained in the English tradition, J.B. Yeats turned away from its artistic conventions as he rejected the inevitability of English rule that subordinated Irish culture. His art found a dignity in the Irish character that opposed the negative stereotypes perpetuated by colonialism. His watercolors show the everyday character of the Irish, and his comics mock British cultural heroes like Sherlock Holmes. In my presentation, I will examine some of J.B. Yeats’s cartoons and watercolors, with the aim of advancing our understanding of the artistic efforts that promoted decolonization in Ireland. I hope to show that the aesthetic and political dimensions of J.B. Yeats’s art are inseparable. In this way, it should be clear that both brothers were working towards the same goal in their work.

**9:15AM: In dialogue to celebrate ancestral voices from both sides of the Atlantic: Chinua Achebe and James Baldwin**

Meltem Oztan

College of Arts & Sciences, Kent State University

Upon the arrival of the colonizers to Africa, the structure of African societies underwent dramatic transformations. The native people were immediately denied their native languages and religions since they were subjected to the language and religions of the European colonizers. In their attempts to deracinate, the colonizers not only announced the whole world that they were superior to African societies, but also created the assumed opposition of the African world with the West, imprisoning the African in the misrepresentative myths of inferiority and ignorance. In addition, in their oft-cited story of bringing civilization to the land of the barbarians, they attempted to destroy and reconstruct the complex formation of the African culture. It became an insatiable passion for the colonized writers, who shared a common history of acculturation and degradation, to confront these false representations and challenge the dishonoring myths of the African continent. James Baldwin and Chinua Achebe are two writers from different continents. Nonetheless, regardless of the spatial and temporal disparities of their upbringing, they shared similar concerns in writing. This paper intends to show the complex ways these writers aim at reinscribing their ancestors in history by giving a voice to their historically silenced stories.

**9:30AM: Material conditions for women writers and women's literacy: Virginia Woolf's perspective-Then and now**

Shazia Nasir

College of Arts & Sciences, Kent State University

Virginia Woolf's concern for the uplift of working-class women

Using Virginia Woolf's introductory letter to *Life as We Have Known It*, I will argue that contrary to popular belief, Woolf was not an ivory-tower snob lacking political awareness and class sensitivity. Recounting her attendance of a 1913 meeting of the Women's

Co-operative Guild in the letter, she vehemently castigates her role as a "benevolent spectator" and sharply feels the divide between her middle-class status and the working-class meeting she was invited to attend. Drawing on Woolf's exhortation for real involvement in the politics of the working-class as evident in her letter and a strong criticism of her class's view of the working-class illustrates her genuine empathy with the working-class women. Her cry, "leave me, in my own blood and bones, untouched" is an attempt to jolt the reader out of their class apathy and make them aware of the sufferings of the working-class women and see the legitimacy of their demands. When she says, "If every reform they [working class women] demand was granted this very instant it would not touch one hair of my comfortable capitalistic head", she is trying to translate the sympathy she has invoked for the working-class into an empathy capable of manifesting as prosocial action.

**9:45AM: Reading on the edges: Paratextual justification in Erskine Caldwell's "God's Little Acre"**

Ross Tangedal

College of Arts & Sciences, Kent State University

While many consider paratexts, such as introductions, prefaces and illustrations, to be secondary to the text proper, their justification within books of varying subjects proves vital to authorship and readership. In looking at specific paratextual materials in the 1934 modern library edition of Erskine Caldwell's 1933 novel *God's Little Acre*, I argue that Caldwell (and his publisher) specifically intends for his novel to be read as a result of the obscenity trial which followed the novel's initial publication that same year. Releasing this novel with a new introduction by the author satisfies several authorial needs, among them context and reception, authority itself, and structural reinterpretation. Also, by including the decision of Judge Benjamin Greenspan (who oversaw the obscenity trial) at the end of the text proper, author and publisher again utilize paratextual processes in order to deliver *God's Little Acre* in a popular (and critical) way. Utilizing the model and theory of paratext as developed by Gerard Genette, I conclude that Caldwell's text must be read in a direct way due to the presence and placement of paratexts, both by the author and publisher, and that these paratexts alter the reception and legacy of the text proper.

**10:00AM: The nature of women: The evolution of gender expectations in cultural and literary texts**

Colleen Thorndike

College of Arts & Sciences, Kent State University

In nineteenth-century America, there was a flourishing of conduct and domestic advice books published. Domestic advice books helped define not just the domestic sphere of women, but also the middle-class household, and these guidelines and definitions carried over into the literature of the day. While we may think these are old-fashioned notions, similar guidelines are still in place for women. We can see these gender expectations play out in contemporary literature and popular culture. While writers of domestic advice books thought they were explaining differences in the biological natures of men and women, they were not describing anything natural, but creating social constructs of what each gender can and cannot do. My paper will trace gender expectations for women from the mid-nineteenth century through the twentieth century; I will track these expectations through an analysis of a sampling of cultural, literary and pop culture texts. I hope to show that while there is a persistence of high societal standards for women to uphold in regards to conduct, domesticity, and beauty, there are now more options for women to bend and break these gender expectations and a broadening of the definition of what is natural behavior for women.

**Economics and Marketing (KSC Room 317)**

**9:00AM: Cards, creatures, and almost anything: A study of children's trading**

Marie Yeh

College of Business & Administration, Kent State University

This study examines the phenomenon of children's trading and how it functions as a form of exchange. How children acquire new things has long been a focus for marketers; but it traditionally has been approached from the perspective of the "nag factor" examining how young children influence their parents to obtain desired goods as it is assumed that young children are constrained in their ability to directly participate in the marketplace. Yet children do actively participate in a marketplace that they create amongst themselves using their own toys to barter with other children. Trading demonstrates children enacting practices in their daily lives that allow them to get around constraints to acquire objects to meet their own wants and desires. Thus through its study, I seek to expand our understanding of children as consumers. Non-participant observation, interviews with children, and subsequent interviews with their parents are to triangulate different perspectives on the phenomenon. Results report on the meaning this behavior has and the purpose it serves in the lives of children, the socialization that occurs during its enactment, the bargaining and negotiating processes children use to barter, and the aspects of traded goods that make them desirable to children.

**9:15AM: Management of a multinational sales force: A transaction cost examination of the sales network**

Rebecca Dingus

College of Business & Administration, Kent State University

Examining the management of sales networks in light of a multicultural setting, this study focuses on how a sales manager relates to the salesforce through the capabilities of adaptation, trust, and self-efficacy. These capabilities are expected to vary across sales networks of different sizes and multicultural levels. As salesforce cultural diversity increases, sales managers will be faced with increased uncertainty about how they can best manage the salesforce. Because of this uncertainty, managers will need to be more adaptable. As managers adapt to their salesforces, they are more likely to have more frequent interactions. Just as diversity impacts management, the size of the salesforce can also impact a manager's style; it can be more difficult and time-consuming for a sales manager to adapt to a large network than a small network. Increasing network size likely increases the uncertainty sales managers face. Applying a framework of Williamson's transaction-cost-analysis (TCA), the effects of uncertainty and frequency are portrayed in the sales manager-salesforce network. How sales managers react to uncertainty and variations in interaction frequency affect how they choose to control the salesforce. Size and cultural diversity are proposed as indicative of the type of control strategy chosen by sales managers.

**9:30AM: The price of guilt: Explaining pay what you wish behavior**

Paul Mills

College of Business & Administration, Kent State University

What happens when customers are allowed to pay any price they wish, including zero, for a product they want? The neoclassical economic model predicts that buyers will act selfishly and maximize their own financial gains by taking the product and paying nothing in return. But in fact most people pay a good deal more than zero, even when there is no strategic motive for them to do so. We examine the results of both field and laboratory pay what you wish experiments to understand the role that an individual's capacity for guilt plays in determining the price they choose. We find that buyers attempt to solve an optimization problem by selecting that price which both minimizes their anticipated level of guilt while at the same time producing the highest level of consumer surplus. The research has implications for understanding the role that personality traits play in issues of fairness, and pricing policies in exchanges for a wide range of settings.

**9:45AM: Suggested bounds in participative pricing mechanisms: When should you limit your customer?**

Hillary Mellema

College of Business & Administration, Kent State University

In a pay-what-you-want (PWYW) setting, the buyer determines the price, typically including zero. Sellers may be motivated to use a suggested bound (such as MSRP) to protect themselves from a zero-payment. Neoclassical economic theory would predict that suggestions from the seller will not have any effect on the price the buyer pays. However, previous research has shown that absolute bounds (minimum or maximum prices) and suggested prices from the seller do influence buyer's willingness to pay through an anchoring effect. This paper explores 1) how buyers react to the seller's use of suggested bounds, 2) when sellers decide to use suggested bounds, and 3) the effectiveness of suggested bounds in influencing buyers' chosen prices. Our findings indicate that suggested prices that are set below the market price result in an anchoring on the suggested bound. If no suggestion is used, the anchoring occurs around the market price. There seems to be no advantage to using a suggested bound that is below the market price. We also find that sellers tend to use bounds that encourage the buyer to pay a fair price, rather than those that place themselves at a disadvantage.

**10:00AM: The impact of person-charity congruence on donation behavior**

Hua Meng

College of Business & Administration, Kent State University

This study examines donor behavior to multiple charities. The paper examines "charity personality", a parallel construct that associates human characteristics with a charity. We explore the notion that individuals perceive multiple dimensions of their own personality, and that these dimensions can be expressed via donations to multiple charities with different charity personalities, but with a high level of congruence to the individual. The research suggests that people tend not to perceive the multiple charities in their donation portfolio to vary in terms of charity personalities. Moreover, the levels of congruity are different across the dimensions. However, the pattern of the congruity levels across charities is the same; that is, regardless of the charities, the ranking of congruity levels for the four dimensions is consistent.

## *Identity and Behavior (KSC Room 303)*

### **11:00AM: Religious vs. non-religious: The effect of a counter-normative identity on salience and prominence**

Fritz Yarrison

College of Arts & Sciences, Kent State University

Research in identity theory has previously explored a number of different identities. A majority of these, however, have been identities that are socially desired and expected. This research seeks to explore a different type of identity, those that are counter-normative. This research aims to begin the exploration of how individuals with counter-normative identities fit into the identity processes posited by identity theory. This research uses a nationally representative web-survey to explore the differences between a normative identity (being religious) and a counter-normative identity (being non-religious). The findings suggest that differences do exist in the identity processes of those individuals with a counter-normative identity. The results indicate that the main area where differences exist between these two groups is identity prominence.

### **11:15AM: Normative and counter-normative identities: Discrepancy, cognition, and emotional response among parents and non-parents**

Brooke Long

College of Arts & Sciences, Kent State University

Using survey data from a nationally representative sample of adults and groups structural equation modeling, this research seeks to explore whether or not meaning discrepancies and role discrepancies predict an emotional response as suggested by previous research (Burke 1991; Burke and Stets 2009; Stryker 2004) regarding one's identity as a parent, voluntarily childless or temporarily childless. This research also will incorporate an aspect of identity theory that has not received a great deal of attention, specifically the role of cognition (Serpe 1991) in formulating identity relevant meanings and behaviors. This research also explores various ways of measuring discrepancy: role-identity discrepancy and role-meaning discrepancy.

### **11:30AM: Lifting the veil: Literary evidence for interactions between Grecian mystery traditions**

Shellie Smith

College of Arts & Sciences, Kent State University

Much is not known about the Grecian mystery traditions, largely due to the level of secrecy surrounding the cult activities. However, it is possible to glean some information about the cults through various literary sources. The three main mystery traditions in ancient Greece, the Eleusinian, Bacchic, and Orphic mysteries, not only coexisted during the same time period but competed against one another. Indeed, the Bacchic and Orphic traditions capitalized on the success of the state-sanctioned Eleusinian mysteries when forming their own traditions, making changes in mythology and structure based on their criticisms of the latter. This unique relationship between the three mystery cults is often subtle, but can be traced through a variety of means. A number of literary sources indicate the relationship between the three traditions, including the Derveni Papyrus, and by comparing the various hymns, it is possible to discern the intricacies between the various mythologies.

### **11:45AM: James Turrell's Ganzfeld pieces: Heterotopian palettes of the fourth dimension**

Heather Haden

College of Arts & Sciences, Kent State University

Light cannot exist without darkness, utopia cannot exist without dystopia. Heterotopia is the liminal state between utopia and dystopia that James Turrell explores. His site-specific Ganzfeld Pieces, under the mirror-as-metaphor model of Michel Foucault's heterotopia, investigate the utopian and heterotopian conceptual landscape through both impregnating color with tangibility as well as illuminating its inherent meaning to establish the authenticity of a heterotopian environment. Light is the medium through which color and matter are unified. Turrell's Ganzfelds, or "total" visual fields, question the materiality of color. Is color intangible, or what Foucault would describe as utopian, or tangible and respectively heterotopian? Are Turrell's color fields the result of the physical world or neurophysiological perception? Viewers within a Ganzfeld Piece experience color as a physical presence existing a minimal distance from before their eyes. Impressionism liberated light from the two-dimensional plane; color field liberated color from traditional form; perhaps the future of color is to liberate its plasticity from the three dimensional realm. A comparison of Turrell's Ganzfeld Pieces to Foucault's six principles of heterotopias reveals Turrell's work to be a paradigm of coloristic freedom emerging into the fourth dimension.

### **12:00PM: Ranging patterns and habitat use of *saguinus midas* in Berg en Dal, Suriname**

Gina Cherundolo

College of Arts & Sciences, Kent State University

Tamarins share a distinct set of behaviors that unite them as a genus, even in geographically isolated populations. Golden-handed tamarins are the smallest monkey species in Suriname. GPS points of several different trails were taken at the study site and were used as reference points as primates were tracked during the day. Preliminary thesis data will be presented of tracking information whenever a group could be tracked for an extended period of time with a GPS and/or if information was corroborated with visual landmarks and timekeeping. From these data, we were able to identify the number of groups inhabiting the site and the general ranging patterns they followed on a daily basis. Observed inter-troop encounters near shared food resources also indicated range overlap and multiple groups that were once thought of as a single, larger group.

## Education (KSC Room 309)

### **11:00AM: Teacher causal attributions: A critical implementation factor in intervention provision for students who exhibit problem behavior**

Andrea Simms

College of Education, Health and Human Services, Kent State University

As researchers encourage teachers to use effective, research-based interventions for students with behavior problems, we realize that no matter how robust and efficacious an intervention is proven to be, it will be of little benefit unless it is implemented effectively and consistently. Factors that influence teachers' responses to student misbehavior, like teachers' causal attributions of problem behaviors and their perceptions of students who exhibit them, are critical to cultivating an understanding of why and how teachers intervene. This research paper explores the extent to which teachers' causal attributions of students' misbehavior affects teachers' inclinations to assist students who display problem behaviors. I also discuss the potential effects of attribution re-training for teachers.

### **11:15AM: A study of relative effectiveness of online visual instructions by combined analysis of brain activity, spatial intelligence, and learning outcomes**

Hyangsook Lee

College of Education, Health and Human Services, Kent State University

This study compared 2D and 3D, both still and animated, online visual instruction styles on participants' brain activity measured by the amplitude of EEG alpha wave, which is known to be associated with cognitive load, and on their recall to see if alpha power and recall differ significantly by depth and movement of visual instruction style as well as by spatial intelligence. In addition, the study sought to determine whether there is any relationship between alpha power and recall.

### **11:30AM: The influence of social media on international students' academic and psychological well-being**

Neete Saha and Aryn Karpinski

College of Education, Health and Human Services, Kent State University

The goal of this presentation is to understand how international students use social media (e.g., Social-Networking Sites [SNSs], Skype), and how these different media influence international students' academic performance and psychological well-being. The current study is collecting information from international students using a large web-based survey about their social media use and other information: (1) Demographics, (2) Academic Information, (3) Psychological Well-Being, (4) Skype Use, (5) SNS Use, and (6) Cell Phone/Smart Phone Use. This presentation will explore if various social media will have a positive, negative, or no impact on international students' academic performance and psychological well-being. Challenges and considerations will be outlined for university personnel pertaining to international student recruitment and retention in light of the results.

### **11:45AM: Preservice special education teachers' views of inquiry in science: Issues and hopes**

Rajlakshmi Ghosh

College of Education, Health and Human Services, Kent State University

This study examined the views of inquiry based science teaching as held by preservice elementary and middle grade special education teachers. Specific questions addressed by this research were: 1) How did preservice special education teachers characterized inquiry based science teaching? 2) How did these teachers describe their practice of inquiry based science teaching as in their classroom context? 3) How did these teachers describe their learning from an inquiry-based science methods course influencing their thinking about their practices? Participants were special education majors selected from a science teaching methods course at a public university. Using a naturalistic inquiry method, data was collected from interviews, questionnaires, participant observation and various class assignments, including their reflection papers. Results indicate that these special education teachers welcome the concept of inquiry based science teaching and perceive this as a valuable tool to teach science. Many of them did not have any prior experience with inquiry based science teaching, and this class was their initial exposure to that. Though they show some hesitance towards practicing inquiry due to factors like time and resource limitations, they feel positive about this method of science teaching and are willing to try it with their special needs students.

### **12:00PM: Cross-cultural perceptions of secondary school experience through interscholastic journalistic inquiry**

Kate Klonowski

College of Education, Health and Human Services, Kent State University

School-aged students typically do not come into close contact with scholastic environments outside of their own. Exceptions such as interscholastic athletics and community-based activities provide some limited experiences with other students and facilities. A program called the Urban Scholastic Media Initiative is seeking to intensify this limited exchange through student journalism. For this qualitative study, four students in this program from two schools participated in a day-long journalistic investigation. A team of two student journalists from each school interviewed the teachers, students and administration from the other school as a part of an in-depth story for their respective school news outlets. Before embarking on this exchange, the students were all interviewed about their perceptions of their own school's academics, facilities and social structures as well as how they anticipated the conditions at the school they planned to visit. Upon return, the students were all interviewed again to see if those perceptions had been modified by their experience.

## Space and Place Part II (KSC Room 310A)

### **11:00AM: Food insecurity on campus**

Natalie Fox and Valerie Reed

College of Education, Health and Human Services, Kent State University

Food insecurity is defined by the USDA as the lack of access at all times to enough food for an active, healthy lifestyle (Coleman-Jensen, Nord, Andrews, & Carlson, 2012). Although it affects many students, food insecurity is a newly emerging research topic in the field of higher education. Some institutions have opened campus food pantries to assist students, especially in the wake of the economic downturn, but the extent of food insecurity on college campuses is unknown to many. This session will discuss quantitative research conducted in Fall 2012 about the prevalence of food insecurity at Kent State University. Results were generated from a 36-question survey comprised of demographic, food pantry use/knowledge, and USDA food insecurity questions distributed to a random sample of students. Thirty-seven percent ( $n=142$ ) of participants are considered food insecure, with approximately a third of those ( $n=48$ ) further classified as very low food secure. The researchers will also discuss how food insecurity affects the student population and how institutions can respond to the problem.

### **11:15AM: Design education for Uganda secondary schools**

Penina Acayo

College of Communication & Information, Kent State University

Uganda has one of the highest youth unemployment rates in Sub-Saharan Africa. Despite this predicament, young adults have the ability and the capacity to drive positive social change and economic growth, if given the appropriate resources and opportunities" (International Youth Foundation, 2011). There is a high demand for qualified individuals in design-related professions with competitive salaries. However, due to the lack of qualified individuals in this field, employers have turned to overseas design firms for expertise (Ouma, 2008). Therefore, there's a need to widen the scope of art and design education in Uganda today (Kwesiga, 2000). Currently, design education can only be attained at the university level with only forty percent of secondary level graduates able to join because of the high tuition costs. This thesis proposes a secondary level design education curriculum to be implemented at the advanced secondary level. Implications of this curriculum would empower youths with basic skills to become proactive professionals and prepare them to join the labor market or go on to pursue a more rigorous study at the university level. This would ultimately play a role in reducing the high unemployment rates among the young people in the long run.

### **11:30AM: The butler didn't do it! The continued influence of implied versus directly stated misinformation**

Patrick Rich

College of Arts & Sciences, Kent State University

News stories unfold over time causing some information to be reported before all the facts are known. This can lead to the reporting of mistaken information, or misinformation, that is later corrected once the truth becomes known. Studies of the continued influence effect (Johnson & Seifert, 1994) have shown that corrections are not entirely effective in reversing the effects of initial misinformation. Even when participants remember and report the correction, discredited misinformation continues to influence participants' beliefs. The goal of the current study was to investigate how the nature of the initial misinformation contributes to the continued influence effect. Most studies have employed misinformation that explicitly states the likely cause of an outcome (e.g., the suspect responsible for a crime is explicitly identified). However, news stories often merely imply that something or someone might be the cause of an adverse outcome. The present study was designed to test the hypothesis that implied misinformation would be more difficult to correct than explicit misinformation and would lead to greater continued influence. Overall, the results supported this hypothesis. In addition, a novel finding was that many misinformed participants were unwilling to accept the correction as truth.

### **11:45AM: The room of relief**

Veronica Ceci

College of Arts & Sciences, Kent State University

A presentation on the three person traveling exhibition featuring a currently enrolled Kent State master's student and alum.

### **12:00PM: Economic evaluation of a land bank program in Canton, Ohio**

Carissa Bowlin

College of Public Health, Kent State University

Objective: To evaluate the cost-effectiveness and cost benefit of a land bank for the City of Canton, Ohio. The end goal is to enhance the city's property values and access to active living. Methods: Baselines cost effectiveness and cost benefits were derived by 1.) Estimation of intervention costs including demolitions; 2.) Increases in physical activity due to perceived levels of safety (decreased crime); 3.) Increases in property value measured by local Realtors; 4.) Decrease in municipal resources utilized for vacant buildings; and 5.) Calculation of the net benefit of the program by subtracting the intervention costs from the value of increased walkability plus value gained from not using municipal resources for vacant buildings plus increased property value. Results: Baseline value of homes is expected to increase at 10% for one abandoned home removed per block and 30% for two homes per block. Physical activity is anticipated to increase by 0.6%, 2.0% and 1.5%, according to levels of perceived safety. Conclusions: The land bank program is cost effective and cost saving in most scenarios considered. Land bank programs warrant careful consideration by policy makers and program planners. Program data cost should be routinely collected in evaluation of land bank programs.

## Health and Wellness Part II (KSC Room 310B)

### **11:00AM: The pilot project, "Perception of Thailand young people towards intention of voluntary HIV counseling and testing"**

Pimpanitta Jittapirom

College of Nursing, Kent State University

This descriptive cross sectional correlation study was to examine the response rates via Facebook surveys, the reliability of the Health Belief Model (HBM) Thai version, and the relationship among seven HBM constructs and intention of young people to undergo VCT. 50 college students whose ages among 18-24, currently enrolled as a student in colleges in Chiang Mai province, Thailand were selected via Facebook by using exponential non-discriminative snowball sampling technic. Response rate via Facebook was 28%. The reliability of the 7 subscales of HBM was range from .50-.90. A Pearson correlation was calculated to determine the relationship among age, gender, education level, HIV/AIDS knowledge, perceived susceptibility, severity, benefit, perceived barriers, cues to action, social support, self-efficacy and intention to undergo VCT (n=14). A strongly significant positive relationship was found between gender and social support ( $r = .60, p < .02$ ), social support and intention to undergo VCT ( $r = -.69, p < .01$ ), perceived susceptibility and perceive benefit ( $r = .65, p < .01$ ), perceive benefit and cues to action ( $r = .79, p < .001$ ). The finding from the literature reviewed, and this study indicated that perceived severity, and cue to action should not include to the dissertation model.

### **11: 15AM: The heart iRx study: Implications for future studies of adherence behavior in older adults with heart failure**

Carly Goldstein, Emily Gathright, and Joel Hughes

College of Arts & Sciences, Kent State University

Over five million Americans suffer from heart failure (HF), and many poorly manage their disease. The purpose of this randomized feasibility study was to compare the impact of two medication reminder systems with and without reminding functions on medication adherence over 28-days. It was hypothesized reminding conditions in both devices would produce the highest adherence rates. Participants were 60 adults (65% male) predominantly Caucasian (83%) HF patients ( $69 \pm 11$  years). Participants were randomized to alarmed or silent conditions and smartphone or pillbox. The automated pillbox had auditory and visual alarms for medications (active) or acted as a pillbox (silent). Four medications were tracked across 28 days. Adherence values per medication were averaged, creating an overall rate per person (outcome measure). A level-2 hierarchical linear model with random effects demonstrated no statistically significant relationship between reminding and adherence,  $\pi[df=54]=0.72, p=.477$ , device and adherence,  $\pi[df=54]=0.17, p=.865$ , or between device and condition,  $\pi[df=54]=-0.98, p=.333$ . Nearly all patients were able to use an mHealth intervention. Adherence rates were high, though not improved by reminding. Social support, established medication systems, and reactivity to measurement may have influenced findings. Future interventions should monitor longer to minimize reactivity and examine successful adherence.

### **11: 30AM: A focus group analysis of global hand hygiene practices and perceptions**

Diana Kingsbury, Lorriane Odhiambo, Julie Schaefer, and Sunita Shakya

College of Public Health, Kent State University

Hand hygiene can prevent transmission of infectious diseases such as diarrheal and respiratory illness in the developing world. The purpose of this study was to develop a stronger understanding of global hand hygiene practices and to determine whether children can positively influence family hand hygiene. Three focus groups with international students from Africa (N=9), Asia (N=13), and a combined group from Asia, Africa, and Latin America (N=13) were conducted at Kent State University. Questions were asked about past, present, and future hand hygiene practices. Focus group sessions were audio-taped, transcribed, and analyzed. Participants recalled learning hand hygiene practices as children at home and school, but these settings did not reinforce or explain proper hand hygiene behavior. Hand hygiene practices were influenced by access to resources, cultural practices, and disease outbreaks. Across groups, there was a low perceived risk for disease transmission via hands. Only participants from Asia and Latin America believed children could influence family hand hygiene behaviors. Hand hygiene in developing countries can be improved. Targeting these behaviors through public health interventions could decrease the incidence of infectious diseases. Researchers should study cultural influences and access to resources to develop effective interventions and increase adoption of hand hygiene behavior.

### **11:45AM: Protein 14-3-3 eta (YWHAH) is essential for normal meiotic spindle formation during mouse oocyte maturation in vitro**

Santanu De and Douglas Kline

College of Arts & Sciences, Kent State University

The 14-3-3 proteins regulate various cellular signaling pathways involved in growth and development including cell cycle. We previously found that 14-3-3 eta accumulates and co-localizes at the meiotic spindle in mouse eggs. To examine the role of 14-3-3 eta, we microinjected mouse oocytes with a translation-blocking morpholino oligonucleotide against 14-3-3 eta mRNA and allowed the oocytes to mature in vitro. Meiotic spindles in those cells were examined by immunofluorescence staining of 14-3-3 eta and alpha-tubulin along with observation of DNA. The morpholino injection caused absence or deformation of meiosis I spindle with reduced or no accumulation of 14-3-3 eta, about clumped or disorganized DNA, and no first polar body formed. Immunofluorescence staining of 14-3-3 eta and alpha-tubulin in control eggs showed normal, bipolar meiotic spindles. We also performed the Duolink In Situ Proximity Ligation Assay that can detect intracellular protein-protein interactions at single molecule level and visualize the actual interaction sites. It revealed marked accumulation of sites of interaction between 14-3-3 eta and



alpha-tubulin at the meiotic spindles and in cell cortices adjacent to the spindles. Therefore, 14-3-3 eta appears to be essential for normal meiotic spindle formation during mouse oocyte maturation in vitro, in part by interacting with alpha-tubulin.

### **12: 00PM: Delayed Bone Development in a Preeclampsia Mouse Model**

Suzanne Lababidi

College of Arts & Sciences, Kent State University

Pre-eclampsia (PE), a disease associated with pregnancy hypertension, is a devastating process which negatively impacts both mother and fetus. PE is associated with intrauterine growth retardation (IUGR), which can affect bone and cartilage development. We investigated the effects of PE during fetal and post-natal bone development. It is unclear how PE affects cartilage and bone development, though angiogenesis may be one possible connection because vasculature is crucial during endochondral ossification and bone development. Recent studies have demonstrated VEGF is down regulated in PE. This study has focused on a BPH mouse model that mimics human PE. BPH fetuses show a significant delay in bone development and endochondral ossification. Histological analysis showed BPH mice demonstrate significantly less von kassa staining and considerably thicker hypertrophic zones in the growth plate when compared to the C57, wild type (WT), indicative of delayed endochondral ossification. Expression of aggrecan and link proteins, key components of the cartilage ECM, were dramatically decreased in BPH fetuses compared to WT. These elements confirm delays in endochondral bone ossification in BPH fetuses compared to WT. Further studies are warranted to elucidate the mechanism of delayed bone formation in PE and therapeutic strategies for the treatment of this devastating disease.

### **Geography and Geology Part II (KSC Room 313)**

### **11:00AM: Communicating school emergency plans with the community using resilient communication**

Jennifer Burrell

College of Arts & Sciences, Kent State University

Ohio requires a multi-hazard plan for K-12 schools. The problem is that often the plan is not communicated to the school and the local community. This paper explores how social media and social networking sites can build lines of communication between the school administration and community. Establishing these lines of communication prior to a school crisis can help in creating better prepared and resilient school and local communities. People know what to expect, in terms of procedures and alerts, from the school during a crisis. Also, people know where and who to turn to during a crisis. This can help in dispelling rumors and inaccurate information that so frequently accompanies crisis situations. Lines of communication provide an opportunity to include the public in on emergency planning and as a result help to forge a partnership between the school and local community.

### **11:15AM: Climatic controls of regional Arctic sea ice extent since the 1950s**

Thomas Ballinger

College of Arts & Sciences, Kent State University

Arctic sea ice extent has drastically declined in recent years through summer as showcased by the record losses observed during the month of September. Nowhere have these losses been more apparent than in the western Arctic Ocean, a region encompassed largely by the Beaufort and Chukchi Seas that border northeastern Eurasia and northwestern North America. This region's striking sea ice declines have been coincident with substantial societal, ecosystem, and environmental impacts, making its monitoring crucial as the climate system continues to change. However, the contributions of various climate signals to these ice losses are still being debated by the climate research community. This presentation will examine the mechanisms potentially fueling sea ice behaviors in the western Arctic since the 1950s. Specifically, it will evaluate the relationships between various climate drivers, including teleconnections (such as El Niño and the Arctic Oscillation) and Northern Hemisphere surface air temperatures, and September ice extent using statistical methods including principal component analysis and a simple linear regression model. Concluding remarks will also acknowledge other potential causes of the ice variability including sea surface temperature increases and the influence of synoptic weather patterns.

### **11:30AM: Characterizing slope stability of colluvial soils in Ohio using LiDAR data**

Matthew Waugh

College of Arts & Sciences, Kent State University

Slope instability in colluvial soils is a recurring problem along roadways throughout the state of Ohio. Colluvial soils develop from the weathering of the underlying bedrock and are typically derived from shales and claystones, which are prevalent in Ohio. The objective of this study is to analyze the engineering properties of colluvial soils in Ohio, and to evaluate the use of airborne LiDAR in differentiating between the types of slope failure that occur in shale-derived versus claystone-derived colluvial soils. To accomplish this, twelve colluvial slopes were sampled in southern Ohio, six each in shale and claystone. The engineering properties determined to date include slake durability of bedrock units, and natural water content, grain size distribution, and Atterberg limits of the soil samples. Additional laboratory tests will include direct shear tests of rock-to-rock and rock-to-soil contacts and x-ray diffraction analysis. LiDAR data, obtained from OSIP, were used to generate digital elevation models for identifying different types of slope failures affecting shale-derived versus claystone-derived soils. Preliminary laboratory results indicate that claystones are less durable than shales. Evaluation of LiDAR indicates that LiDAR imagery may be effective in differentiating between rotational slides common in claystone-derived soils and translational slides common in shale-derived soils.

### **11:45AM: Circulation Pattern and Weather Type Associations with the Air Quality Index in Cleveland, Ohio**

Cameron Lee

College of Arts & Sciences, Kent State University

Using either a circulation pattern or weather type approach, a variety of previous studies have successfully related synoptic-based types to air quality at different locales. This research, however, presents an initial foray into using a combined synoptic methodology, classifying both regional mid-tropospheric flow patterns and in situ holistic surface weather situations, and applying it to air quality issues in Cleveland, Ohio. Results indicate significant associations with ridge (trough) patterns and poor (good) air quality. Even more significantly, tropical (polar) surface weather types often occur along with a high (low) daily air quality index (AQI). When the surface type and flow patterns are considered in combination, daily air quality is even further impacted in the expected direction, with results varying depending on the primary pollutant. The successful application of the combined methodology used herein should facilitate further exploration of this method in other locations and upon other outcomes, especially considering the usefulness of synoptic climatological methods in climate change impacts research.

### **Exercise Physiology and Biomedical Sciences Part II (KSC Room 314)**

### **11:00AM: The effect of peer influence on exercise intensity and enjoyment during outdoor running in collegiate distance runners**

Andrew Carnes

College of Education, Health, and Human Services, Kent State University

**PURPOSE:** The purpose of this study was to determine if exercising with a familiar peer or in a group of familiar peers (versus alone) affects average running speed and/or liking of the exercise during a self-paced outdoor run in competitive distance runners. **METHODS:** Male distance runners (N=12, 20.5 ± 1.98 years old) completed running trials in a randomized order on separate days, under three different social conditions: alone, with a single peer, and in a group with two additional runners. Trials consisted of a self-paced 6.4-km run on a measured outdoor trail. Elapsed time and liking of the run were the primary dependent variables. **RESULTS:** A significant ( $p \leq 0.008$ ) main effect of condition occurred for elapsed time and liking. Participants ran faster alone (14.61 ± 1.35 km · hr<sup>-1</sup>) than with a peer (13.76 ± 1.26 km · hr<sup>-1</sup>) or group (13.68 ± 1.81 km · hr<sup>-1</sup>) and enjoyed running in a group (78.41 ± 8.86 cm) more than running alone (63.00 ± 14.25 cm). **CONCLUSION:** The presence of peers increased the liking of a bout of exercise in collegiate male distance runners. However, both peer conditions reduced average running speed in these athletes.

### **11:15AM: Single leg cycling: Implications for rehabilitation**

Keith Burns

College of Education, Health and Human Services, Kent State University

**Background:** mass during aerobic training allows for greater muscle specific exercise capacity and may help diseased populations. This investigation compared metabolic and cardiovascular responses of double-leg cycling to single-leg cycling with and without the use of a counterweight. Ten individuals performed three cycling conditions consisting of double-leg cycling, single-leg cycling with the use of a counterweight attached to the crank on the opposite side of the active leg, and non-counterweighted single-leg cycling. For each condition participants performed 4 minute cycling trials at three different work rates. Oxygen consumption, respiratory exchange ratio, heart rate, rating of perceived exertion and liking score were measured and energy expenditure and gross cycling efficiency were calculated. VO<sub>2</sub> and HR were similar for DL and CW conditions. However, during NCW VO<sub>2</sub> was 37±18%, 33±11% and 23±13% greater and HR was 37±18%, 33±11% and 23±13% greater than during CW at 40, 80 and 120 watts. RPE was lower and liking scores were greater for CW compared to NCW condition. Counterweighted single-leg cycling provides an exercise modality that is easier to coordinate and induces considerable more peripheral stress while maintaining similar cardiovascular demand compared to double-leg cycling.

### **11:30AM: Anuran egg mass survival in lab settings while exposed to invasive plant extracts**

Lisa Regula-Meyer

College of Arts & Sciences, Kent State University

The ecology of a community is a complex subject, with many interacting organisms and their environment. These interactions can be beneficial to some organisms, harmful to others, or neutral, but all help to create communities that ecologists study. At the same time, this complexity creates confounding factors for those very same studies and make them difficult to conduct and analyze. To work around this fact, we conducted a laboratory experiment to remove as many of the confounding factors as possible. *Lithobates clamitans* and *L. catesbeianus* eggs were raised in water exposed to extracts of *Phragmites australis*, *Typha angustifolia*, and *Sparganium americanum*. The first two are invasive species to North America, while the third is native, and all are relatives of grasses that are also hydrophytes. There were significant difference in hatch rate across the three, with only eggs in native hydrophytes showing hatch rates similar to naturally occurring populations. While this study was a small preliminary study, the findings of such an impact to native amphibians from invasive plants in a controlled environment is concerning for amphibian conservation. This finding is not the first reported occurrence of laboratory studies finding deleterious effects of invasive plants on native amphibians.

### **11:45AM: Finite element studies of the chirality and shape transitions in twisted nematic elastomers**

Vianney Gimenez-Pinto

College of Arts & Sciences, Kent State University

Recent experimental studies have demonstrated that twisted nematic elastomer ribbons show reversal of macroscopic chiral sense under a change of temperature. We model these transitions of shape and chirality using finite element methods in order to explore the complex interplay of chirality and microstructure in these fascinating materials. Twisted nematic elastomer ribbons are thin rectangular strips with a nematic director that varies along the thickness of the sample with a twist of 90deg. Sample shape evolution under heating/cooling depends on aspect ratio (width to thickness), and the handedness and geometry of director twist. Finite element simulations of L- and S-geometries show that ribbons with width/thickness ratio above a threshold value undergo a sequence of shape transitions: right-handed spiral->right-handed helicoid->left-handed helicoid->left-handed spiral. Narrower ribbons show only one transition, from right-handed helicoid->left-handed helicoid. We analyze how the helicoid pitch increases as the width/thickness ratio increases until the shape selection threshold is reached. For ribbons in the X-geometry, FEM simulations show only one transition, from right-handed spiral->left handed spiral. As observed in experiments, there is no transition to helicoid shape, even for very narrow samples. These results demonstrate the value of finite element methods for engineering design of nematic elastomer devices.

### ***Science and Nursing (KSC Room 315)***

### **11:00AM: Describing and evaluating the feasibility assessment process for local health department consolidations**

Aimee Budnik and Ken Slenkovich

College of Public Health, Kent State University

The purpose of this study was to evaluate the effectiveness of a methodology used to assess feasibility of consolidating multiple health districts into one organization in two Ohio communities. This methodology provides communities the tools to systematically determine the potential feasibility of consolidating multiple health districts into one. The study design was a mixed methods approach that collected data from key informant interviews, project implementation documents, and task force member's survey. Descriptive analysis and bivariate relationships were examined and content analysis was conducted to identify emerging themes from meeting minutes and interviews. Results suggest that the 8 critical areas could be expanded to include measures such as political will, capacity, readiness to change and baseline data. Potential consolidators could benefit from using standardized methodology. To our knowledge, there is not a standard methodology to assess feasibility for consolidating local public health departments and this methodology provides a starting point.

### **11:15AM: The effectiveness of problem based learning on undergraduate nursing students**

Homood Alharbi

College of Nursing, Kent State University

In the modern health care environment, professional nurses require to response to dynamic complicated situations that require skills in problem solving skills, professional knowledge, decision making ability, and group collaboration (Gabr, & Mohammed, 2011). To meet these challenges, graduate nurses need to be educated in an approach that foster these fundamental skills (Yuan, et al, 2009). Problem Based Learning (PBL) is a student- center teaching approach that supports the development of problem solving skills, knowledge acquisition, self- directed learning, team collaboration, and students motivation to learn (Vitrup, & Davey, 2010). PBL has been adopted in a number of medical schools, nursing and midwifery programs and other health related curricula in many countries worldwide (Rowan, McCourt, & Beake, 2007). However, teaching and learning approaches in the majority of nursing classrooms in Saudi Arabia are still dominated by Non PBL approach. This study aims to examine the effectiveness of PBL on the undergraduate nursing students in Saudi Arabia. This is a randomized control trial, repeated measure design. Comparison group will have three lectures in NPBL and intervention group will have three lectures in PBL. This study has application on the nursing education which enhances graduates' critical thinking and problem solving.

### **11:30AM: Induced quadruplex to downregulate eIF-4E expression: A novel approach to cancer therapy**

Debmalya Bhattacharyya

College of Arts & Sciences, Kent State University

Cancer cells have high demand for various proteins to survive and migrate to other regions. We aim to starve the cancer cells of these vital proteins that are required for their survival, resulting in cell death. One such protein eIF-4E is absolutely essential for protein synthesis and is overexpressed in multiple types of cancer including prostate, breast, stomach, colon and lung. Additionally, the expression of growth factors involved in malignancy is lowered if eIF-4E level decreases. The presence of a G-quadruplex structure in the 5'-untranslated region (UTR) of mRNA generally suppresses translation. We will target the eIF-4E mRNA and knock it down by a G-rich small DNA which will also contain an internal guiding sequence (IGS). The IGS will guide the molecule to the correct target sequence eliminating non-specific effects and the G-rich segment will induce a bimolecular G-quadruplex in conjunction with G-rich stretches of the eIF-4E mRNA and inhibit its translation. Circular Dichroism spectroscopy and RNase T1 footprinting show the formation of an intermolecular G-quadruplex in vitro. We anticipate that the combined effect of the induced quadruplex and the IGS might be an improvement over the knockdown effects of individual moiety.

### **11:45AM: Sensitivity of patient wait times with human and equipment resources: A case study of the Labor and Delivery Department of Akron General with the use of Computer Simulation**

Candice Vander Weerd

College of Business Administration, Kent State University

This paper uses computer simulation to empirically test the sensitivity of the Akron General Labor and Delivery department to the changing factor levels of Human and Equipment resources. Incremental human and equipment resources are tested to determine if human resources or equipment resources affect total average patient waiting times in the system as well as to whether the effects of each types of resources are equal or similar. Fractional factorial analysis is then used to construct an experiment whereby human and equipment resources are added simultaneously to determine if optimal interactions may be identified. ANOVA is then used to identify these interactions and determine if the combination of human and equipment resources has the ability to reduce waiting times. As the climate of the healthcare industry changes with regulations, human and equipment resource management proves to be an important role in hospital design and patient comfort.

**12:00PM: Inhibitory Kinesio® tape application to the hamstring muscle group: An investigation of active range of motion and perceived stiffness over time**

Rachael German

College of Education, Health, and Human Services, Kent State University

Context: To determine the inhibition effects of Kinesio® tape on the hamstrings muscle group. Objective: Although liberal anecdotal support exists, there is a lack of scientific data reported relative to the use of Kinesio® tape. Design: The study was a within subject – repeated measures design. Setting: Division I and high school athletes from varying Ohio schools. Patients: Subjects consisted of college and high school athletes who had limited range of motion. There were a total of 29 subjects (21 males, mean age 17.191, SD= 1.750 and 8 females, mean age 17.750, SD= 2.493). Interventions: Subjects received both Kinesio® and sham taping methods with measures of dependent variables taken at baseline, immediate, 4 days, 8 days, and 12 days of taping. Tape applied every 2 days. Main outcomes measures: A 2 way ANOVA was used to analyze data. Results: Main effect of time for both taping conditions was revealed across all dependent variables.

*Learning and Logistics (KSC Room 316)*

**11:00AM: Computer-Assisted Language Learning (CALL) in Chinese EFL Context: QQ application in L2 reading classroom**

Yang Gao

College of Education, Health, and Human Services, Kent State University

QQ is an online chatting device used in China. The present study designed an online reading course for 10 Chinese EFL learners, who used QQ to read, learn and communicate with the teacher. The internet-based class provided the students with online practice and timely feedback from the teacher. Findings showed that students in the study have more peer discussion, and lower anxiety than in a traditional face-to-face classroom, and these benefits helped them better comprehend their reading passages. Implication for future study suggested that research on computer-assisted language learning might consider how to take socio/affective factors into L2 reading classroom.

**11:15AM: Peer, familial and relationship conflicts as risk factors for suicidal behaviors in youth presenting at a Psychiatric Intake Response Center**

Krystal Tossone

College of Arts & Sciences, Kent State University

Research aim: To determine whether the interaction of familial problems, peer problems, and dating issues among adolescents is predictive of suicidal behavior among youth presenting at a PIRC. This aim has two questions: 1. Do youth who present at a PIRC with familial, peer and relationship problems have a higher risk of suicidal behavior than those who only have one type of problem (familial, peer or relationship)? 2. Is bullying a significant predictor in suicidal behavior among youth who present at a PIRC, taking into account other peer and familial interactions? This study employed a systematic chart review of patients at Akron Children's Hospital. The outcome of interest is suicidal behavior (thoughts, plans, intentions or behaviors). The exposures of interest, discovered through a content analysis, are the presence of peer discord (bullying or peer problems), intimate partner discord (breaking up with a partner, a fight with a romantic partner, etc.), and familial discord (fighting with a parent or sibling, punishment of a behavior by a parent, etc.). Statistical analyses will be conducted. It is hypothesized that the interaction of familial and peer issues for youth presenting at a PIRC will be a significant factor in predicting suicidal behaviors.

**11:30AM: On the reverse isoperimetric inequality for some measures**

Galyna Livshyts

College of Arts & Sciences, Kent State University

The classical isoperimetric inequality says, that the ball of volume one has the smallest surface area among all the bodies of volume one. For example, cube with the side one has smaller surface area. The reverse question cannot be asked directly: the surface area of an (even convex) body with the prescribed volume can be arbitrarily big. Though, if we provide the space with a finite measure, this question can be asked and in some cases answered. We discover this problem in the asymptotic sense for rotation-invariant log-concave measures.

### **11:45PM: Refrigerated cargo unloading queue optimization in a mixed cargo warehouse environment**

Karoly Bozan

College of Business Administration, Kent State University

Since time has turned into a strategic resource, innovative processes are required to gain competitive advantage and to increase productivity. Tracking lost time and altering practices are the most common ways to increase productivity. Queuing refrigerated trucks while waiting for unloading is not only tracked as lost time, but also as potential source of pollution and increased engine wear due to the running engine in the queue. This study aims to compare several refrigerated cargo unloading scenarios in a mixed cargo warehouse environment. Opening up docks, which are designated for other cargo types, rearranging the

### **Information and Empowerment (KSC Room 317)**

### **11:00AM: Social networking services' indirect effect on social capital: Generalized trust and political efficacy**

James McQuiston

College of Arts & Sciences, Kent State University

Social networking service (SNS) use influences social capital through numerous channels, indirect and direct. Social networking is hypothesized to increase generalized trust and external political efficacy, two indirect contributors of social capital. The creation of more positive attitudes towards the trust of strangers and personal ability to enact change are facilitated through SNS use. These positive externalities are posited to bolster overall involvement in civic society, and represent a potential solution for civic disengagement, the democratic divide, and the production gap. An examination of Social Side of the Internet Survey data evaluates this proposed hypothesis. When variables capturing a respondent's demographic factors and group affiliations are present, social networking intensity represents a significant and positive contributor to both generalized trust and political efficacy at the individual level. Previous research has proposed that demographic or associational factors matter in the determination of generalized trust and political efficacy attitudes. This research supports these assertions and urges subsequent research to include social networking as a determinant of indirect causes of social capital.

### **11:15AM: "Living by the sword": Insights from the kingdom of God**

Oindrila Roy

College of Arts & Sciences, Kent State University

I study the effects of "belonging", "behaving" and "believing" on hawkish foreign policy attitudes in the United States. In doing so, I revisit the scholarly debate regarding the relative influence of the "old religion gap" (in the form of differences attributable to religious affiliation) and the "new religion gap" (in the form of differences due to religious behavior and belief) in explaining hawkish attitudes. Considering there has been some scholarly disagreement regarding whether religious variables have an effect independent of political predispositions (Guth 2008; Page 2006), I disentangle the total religious effects into direct effects and indirect effects via party identification and ideology. Finally, I compare the effect of religion on such attitudes during the Bush administration with those during that of his predecessors since the 1980s. I rely on the American National Election Study surveys for answering my research questions. I use regression analyses to study the relative effects of "belonging", "believing" and "behaving" and for comparing the effects of religion and religiosity across different time periods. I also use the KHB method developed by Karlson, Holm and Breen (2011) to decompose the total effects of the religious variables into direct effects and indirect effects via political predispositions.

### **11:30AM: "The impression produced by them seems quite favorable": American newspapers, the China trade, and the rhetoric of national expansion in the United States, 1842-1856**

Mathew Brundage

College of Arts & Sciences, Kent State University

The First and Second Opium Wars (1842-1856) represented a distinct shift in the relationship between the United States and China. China's loss to the British in 1842 resulted in a marked opening of its ports to foreign trade and influence. Americans wanted to be at the forefront of this new commercial enterprise and cultural authority, but the question remained how best take advantage of this shift? With the Treaty of Wangxia (1843) ratified by Congress and the Chinese emperor, the elusive and potentially lucrative China trade became a significant focus in American news reports on China. This paper will show that whether along the Atlantic coast, in Midwestern and southern agricultural areas, or in the burgeoning mining regions on the Pacific coast, newspapers in United States used the topic of the China trade as a lens to talk about larger issues of American expansion. Whether supporting the construction of a transcontinental railroad; calling for American control of more western territory; or advocating development of canals, news reports framed these endeavors as necessary stepping stones in making American access to China safe, efficient, and dominant relative to the aims of Europeans in Asia and the Americas

### **11:45AM: The effect of government bailouts on default risk and charter values in banking**

Natalya Schenck

College of Business Administration, Kent State University

This paper examines the effects of the Troubled Asset Relief Program (TARP) participation and early repayments on the disciplinary role of bank charter values for publicly traded financial institutions. I find that TARP participation has significantly affected the disciplinary role of the charter values. The effects are most significant for institutions that were able to repay TARP with private equity. All TARP participants exhibit lower sensitivity of the market-based default risk to the changes in charter values compared to non-participants. I find that the disciplinary role of the charter values increased significantly for the non-participants.

This study adds another dimension to the discussion surrounding the disciplinary role of charter value and moral hazard and the impact of government bailouts on moral hazard in banking.

### **12:00PM: Education, perception and confidence: Financial literacy and financial behaviors of young adults**

Colleen Tokar Asaad

College of Business Administration, Kent State University

This paper seeks to better understand how both actual financial knowledge and self-perceived financial knowledge affect financial decisions. Results indicate that financial education in high school has a small effect on the financial literacy of young adults (actual financial knowledge). Self-perceived financial knowledge appears to be just as important as actual knowledge. Holding actual financial knowledge constant at low levels, individuals with high-perceived financial knowledge are more likely to engage in 'good' financial behaviors and less likely to engage in 'bad' financial behaviors than individuals with low-perceived financial knowledge. Additionally, high-perceived financial knowledge is important for both individuals with low actual financial knowledge and high actual financial knowledge, although the effect may be stronger for the former. Overconfidence refers to the positive difference between an individual's self-assessed level of confidence and an individual's actual performance, reflecting an overestimation of accuracy and an underestimation of risks. Overconfident individuals, have a higher propensity to engage in risky financial behaviors. Together, results suggest that financial literacy initiatives should focus not only on factual knowledge, but also on increasing confidence by motivating and inspiring individuals to take action.

## Undergraduate Poster Presentations

### **Poster 1 - G-Quadruplex-Mediated regulation of Tyrosine Hydroxylase gene expression**

Matthew Thompson

College of Arts & Sciences, Kent State University

G-Quadruplexes are secondary nucleic acid structures that can form in guanine-rich regions of DNA and RNA. These structures consist of G-Quartets stacked on top of each other, stabilized by monovalent cations. G-Quadruplexes have been found in the promoter regions of several genes, suggesting that they may have some significance in gene regulation. We investigated the role of the 45 nucleotide G-rich sequence (named TH-12) within the 3' proximal promoter region of the human tyrosine hydroxylase (TH) gene for its ability to form G-Quadruplex conformations and its role in the transcriptional regulation of the TH gene. Tyrosine hydroxylase is an enzyme that catalyzes the rate-limiting step in the synthesis of catecholamines. Deregulation of TH levels has been shown in bipolar disorder, Parkinson's, and schizophrenia, making TH regulation an excellent target for research. Biochemical footprinting and circular dichroism studies were performed to confirm the presence and position of G-Quadruplexes within TH-12. A luciferase reporter assay showed that the TH-12 acts as a repressor of transcription. Additionally, a polymerase stop assay showed the presence of secondary structure corresponding to the 45 nucleotide TH-12 sequence. We are currently investigating the role of various segments within the TH-12 sequence.

### **Poster 2 - If you designate it – will they bike? Bicycle suitability and assessment tools for active transportation modes**

Spencer Baker, Charles Frederick, and Colin Thomas

College of Arts & Sciences, Kent State University

Active transportation benefits both public and environmental health, and should be planned at multiple levels. These plans should be evaluated, monitored, and adjusted when critical information is acquired. The assessment and evaluation of any plan requires various tools and methods of data collection, management, and analysis. If planning for bicycle active transportation, when is a bike map not enough? What tools and methods are necessary to challenge transportation norms? The purpose of this paper is to assess bicycle planning methodologies and grade existing proposals. It examines assessment methods and data requirements, and purposes the novel tool of geospatial video for data capturing and management.

### **Poster 3 - Avoidance symptoms of PTSD mediate the relationship between trauma history and quality of life**

David Strasshofer

College of Arts & Sciences, Kent State University

Following a traumatic experience, a significant minority of victims may develop Posttraumatic Stress Disorder (PTSD)/PTSD symptoms. Individuals who experience PTSS also report poor quality of life (QOL). The current cross-sectional study examined whether the symptom clusters of PTSD (re-experiencing, avoidance/numbing, and hyperarousal) collectively, and individually serve as mechanisms through which interpersonal trauma contributes to reduced QOL in a sample of 58 treatment-seeking adults. Results revealed that a more extensive trauma history positively predicted PTSS and negatively predicted QOL. Mediation analyses further indicated that the total indirect effect of PTSD symptom clusters was significant ( $B = 5.24$  SE = 2.03; 95% CI: 2.11-10.29), suggesting that they collectively served as a mechanism of the relationship between trauma history and QOL. Only the specific indirect effect of avoidance was significant ( $B = 3.18$  SE = 1.41; 95% CI: 0.90-6.80); suggesting that this was the only symptom cluster that served as a mechanism between trauma history and QOL. These results highlight the importance of reducing avoidant thoughts/behaviors in individuals with PTSD, a strategy which may serve to improve subsequent QOL.

#### **Poster 4 – Running performance in Police Academy Cadets predicts executive functioning**

Morgan Shields

College of Arts & Sciences, Kent State University

Purpose: The role of law enforcement officers requires optimal cognitive performance during periods of stress. The link between exercise and cognition has been examined in other groups (Hillman & Jerome, 2003), however no research has previously investigated this relationship in a law enforcement population. The current study examined running performance as a predictor of executive functioning in police academy cadets. Procedure: 38 police academy cadets (17.4% women) completed the Standard Continuous Performance Test (SCPT) to assess reaction time and inhibitory control. Cadets also completed a 1.5 mile timed fitness test. All measures were completed at the onset of police academy training. Results: A positive relationship was found between 1.5 mile run time and mean reaction time on SCPT using a hierarchical regression analysis ( $p=0.017$ ;  $R^2=.252$ ). Conclusions: Results suggest that slower running speed is associated with poorer reaction time on a task of inhibitory control. In combination with previous research findings, the strong relationship noted in the present study suggests cognitive functioning may be better preserved through a fitness mandate. Future research should investigate the role of reaction time and inhibitory control in field performance of this population, and whether stricter fitness criteria would decrease on-the-job errors.

## **Master's Poster Presentations**

#### **Poster 5 - Expression and localization of Osteoactivin in alveolar bone regeneration in post-extraction healing sockets in normal and diabetic rat model Rulla Aswad, Afif Sanyurah, Lana El-Shaar, Hugh Devlin, Fayez F. Safadi Kent State: Department of Biology; Temple University: Department of Anatomy and Cell Biology, NEOMED**

Afif Sanyurah and Lana El-Shaar

College of Arts & Sciences, Kent State University

Osteoactivin (OA) is a novel bone anabolic factor that is known to play a critical role in osteoblast differentiation and function. OA has been shown to be highly expressed at sites of active osteogenesis in vivo. In this study, we investigated the expression and localization of OA during healing and bone regeneration in tooth extraction sockets of normal and Streptozotocin-induced diabetic rats. Delayed wound healing and impaired alveolar bone regeneration is associated with the metabolic abnormalities characteristic of poorly controlled diabetes mellitus. One week after induction of diabetes using Streptozotocin intraperitoneal injections, rats were examined for body weight, glucoseuria and glycosemia to confirm the diabetic condition during the study. Rats underwent extraction of first and second right maxillary molars. OA localization was detected by immunohistochemistry staining. Expression of OA and other bone-related genes were determined by RT-qPCR analysis. An in vitro study was undertaken to support the results of the in vivo study. Taken together, osteoactivin plays a role in bone regeneration and formation in tooth extraction sockets. The decreased OA expression level in extraction sockets in diabetic rats may play a role in the delayed healing and impaired alveolar bone regeneration in these animals.

#### **Poster 6 – Pediatric syndromic surveillance of day care illnesses**

Aieshia Brooks

College of Public Health, Kent State University

Daycare attendance increases the risk of diarrheal and upper respiratory illnesses in young children. Infants and toddlers are highly susceptible to contagious illnesses since they have not been readily exposed to the most common microorganisms, i.e., bacteria/viruses in their built environment. The purpose of this research is to employ syndromic surveillance, which is relatively a new practice in the field of public health, in order to address child health issues within the daycare setting. To conduct the analyses, data was derived from questionnaires administered to each daycare within the City of Cleveland from the Cleveland Department of Public Health Office of Communicable Disease Surveillance and Epidemiology. The outcome of interest was having a cold and seven other risk factors were evaluated through a cross-sectional study to assess the association. Exact logistic regression was used in order to determine the association. The results indicated that the seven risk factors were not significant, thus they did not have an influence on the outcome of interest. Results were biased due to inadequate reporting of illnesses from daycares.

### **Poster 7 – Systematic review of total joint replacement classes effect on patient outcomes**

Rachelle Schneiter, Emily Fisher, and Rebecca Barecca

College of Nursing, Kent State University

**Problem:** Total joint replacement (TJR) is one of the most frequently performed surgeries in the United States. Many hospitals offer “joint classes” to patients to help them prepare for TJR. No recent synthesis of evidence examining the effectiveness of these classes in promoting postoperative outcomes has been published. **Purpose:** The purpose of this evidence-based literature review is to synthesize available evidence to address the following PICO question: In preoperative patients undergoing total joint replacement surgery what effect do preoperative educational classes have on postoperative patient outcomes? **Search Strategy:** Key words derived from the PICO question will be used for free text searching in the Cochrane Library, CINAHL, Medline, and PsychInfo. **Inclusion criteria for the search** will be reports of randomized control trials of outcomes of TJR classes. **Synthesis of Evidence:** Articles meeting the inclusion criteria will be critically appraised according to appraisal guidelines for the type of study reported. **Reports** will be abstracted into an evidence table summarizing the studies’ methods, participants, intervention, outcomes and notes. **Implications for Practice:** Results of the evidence synthesis will be interpreted with implications for practice and further research.

### **Poster 8 – Educating Saudi mothers about child psychological maltreatment: A resource packet about child psychological maltreatment for prevention purpose**

Monerah Almahmoud

College of Education, Health, and Human Services, Kent State University

Saudi Arabia is a youth society; almost 31% of the Saudi population is under the age of 15. Child maltreatment is increasing in the recent years in Saudi Arabia. But little attention starts to be given to psychological maltreatment, which is the incentive of all kind of maltreatment. At 2010, there were 82 child abuse reports received through the National safety registry in Riyadh, only nine cases categorized as psychological abuse. Therefore, this form of abuse need to brought to light to the Saudi Society, and especially for mothers because children are bond to them. The purpose of the project is educating Saudi mothers about the psychological abusive relationships. The project will include a resource packet that includes information about psychological abuse definition, symptoms and risk factors for psychological abuse, and the effects of psychological abuse on children in different aspects. The packet will include helpful written materials that mothers read and use. The project’s goal is to increase the Saudi mothers’ awareness of psychological maltreatment and in order to help prevent from the long lasting effects of psychological abuse on the individuals’ life.

### **Poster 9 – Effect of pretest cue exposure on fear generalization in males and females**

Joseph Lynch III, Tyler Vanderhoof

College of Arts & Sciences, Kent State University

Prevalence rates for anxiety disorders show that women are 60% more likely to suffer from an anxiety disorder than men. One potential reason for this disparity may be due to differential rates in fear generalization to novel cues. Previous studies demonstrate that suggests female rats generalize fear to a novel context faster than males. The current experiment wanted investigated whether exposure to the training context prior to testing could attenuate generalized fear in females. In the experiment, animals were trained in passive avoidance and tested 14 days later. Prior to testing, half of the animals were re-exposed to the training context 5 minutes prior to testing in either the same context as training or a novel context. We found that both males and females were equally able to discriminate between contexts at 14 days after a pre-test exposure to the training context, suggesting no sex differences in the attenuation of fear generalization. Future work should continue to look for ways to reduce fear generalization as such findings may be beneficial for treatment of anxiety disorders.

### **Poster 10 – Pharmacological calcium mobilization synergizes with TLR signaling to enhance IL-12 production by murine DC**

Chi Huang

College of Arts & Sciences, Kent State University

Interleukin-12 (IL-12) is a heterodimeric cytokine important for the establishment of TH1 immune response. Although IL-12 is secreted by dendritic cells (DCs) upon the stimulation by Toll-like receptor (TLR) ligands, multiple signals to DCs are required to produce optimum IL-12 production. Previous experiments have shown DC stimulated with calcium mobilizing agents can rapidly induce mature DC phenotypes, but it has yet been shown that calcium mobilizing agents can act synergistically with TLR ligands to enhance IL-12 production. Murine bone marrow-derived DCs treated with calcium ionophore and TLR ligand significantly enhance IL-12 production by DCs. Immunosuppressive drugs, ascomycin and cyclosporin A, antagonize the phosphatase activity of calcineurin in this calcium dependent pathway, thereby able to suppress the IL-12 enhancing activity of calcium mobilization. When mouse T cells co-cultured with DCs treated by calcium ionophore, TLR ligands or both, DCs stimulated by paired activation are able to elicit greater T cell stimulatory capacity as measured by ELISA for IFN-gamma output, and proliferation measured by CFSE staining. Calcium mobilization may therefore provide a method for superior activation of TH-1 polarizing DCs for clinical testing.

### **Poster 11 – United in discovery: The new face of research**

Shawn Kerns

College of Arts & Sciences, Kent State University

Create a poster in using United in Discovery: The New Face of Research as my guidelines for creating.



## **Poster 12 – Correlated stress components for the parents of children with ASD**

Megan Armbruster

College of Education, Health, and Human Services, Kent State University

This study examined the correlations between systems under stress for parents with children diagnosed with Autism Spectrum Disorder (ASD). Subjects in this study included 14 mothers of children with autism. Thirteen mothers were the biological parent of their child while one mother adopted her child. The children in the study ranged from 28 to 69 months of age. The Parenting Stress Index (PSI) was used to assess parent systems under stress. The results showed that there were significant correlations between both the parent and the child domains. Although no one domain was dominant, the correlations showed that both the parent and child domains were significantly correlated with total stress. Clinical applications are discussed specific to intervention services for parents of children with ASD.

## **Poster 13 – Perceived weight, not body mass index: A strong predictor of suicide risk among US adolescents.**

Dana Mowls, Melissa Zullo, and Vinay Cheruvu

College of Public Health, Kent State University

The purpose of this research was to examine if perceived weight mediates the association between Body Mass Index (BMI) and risk for suicide. Cross-sectional data from the 2009-2011 Youth Risk Behavior System (YRBS) were used for the study. Suicide risk was based on four constructs: (i) feelings of sadness, (ii) suicide ideation, (iii) suicide plan, and (iv) suicide attempt. Low-risk for suicide is defined as having feelings of sadness, suicide ideation or both. High-risk for suicide is defined as having constructs (i), (ii), & (iii), with or without (iv). Multinomial logistic regression models were used to conduct mediation analyses. The association between BMI and suicide risk became non-significant when perceived weight was added to the model as a mediator, suggesting complete mediation. Adolescents whose perceived weight was slightly/very underweight, slightly/very overweight were more likely to be at high risk for suicide: [OR: 1.8, 95% CI: 1.5–2.2]; [OR: 1.8, CI: 1.5–2.1], when compared to adolescents whose perceived weight was normal. These results provide evidence that perceived weight completely mediates the association between BMI and suicide risk and is an important predictor of suicide risk.

## **Poster 14 – Cross species comparisons of the retrosplenial cortex in primates: Through time and neuropil space**

Mitch Sumner

College of Arts & Sciences, Kent State University

Mental time travel (MTT) is the ability to be conscious of both past experiences and possible future scenarios. Behavioral studies have demonstrated that some non-human animals are capable of episodic-like memory, yet there exists no scientific consensus on the extent of memory abilities among non-human species. The retrosplenial cortex (Brodman's areas 29 and 30) plays a critical role in episodic memory, which is vital for MTT. Because MTT appears to be a uniquely human capacity, this region is of major interest for evolutionary studies. The goal of the present analysis was to compare neuropil space, or the space between neurons, among capuchins, macaques, chimpanzees, and humans to determine if humans significantly differ from the other species. The amount of neuropil space provides a proxy measure of connectivity because a large component of the neuropil is comprised of dendrites, synapses, and axons. The results showed significantly higher neuropil fractions in humans relative to the other species examined. Further analysis showed that this difference could not be attributed to a decrease in cell volume. These results demonstrate a unique neuroanatomical reorganization of the human retrosplenial cortex, potentially contributing to complex mental time travel, which is postulated to be unique to humans.

## **Poster 15 – Using the Theory of Motivated Information Management (TMIM) and Family Communication Patterns (FCP) to understand individual decisions to undergo genetic testing for Huntington's Disease (HD)**

Kaitlin Banduch

College of Communication & Information, Kent State University

Huntington's disease (HD) is a rare genetic disease that attacks the nervous system, affecting both physical and psychological functioning (Walker, 2007). Individuals can become aware of their HD status before the onset of symptoms via predictive genetic testing. The proposed conceptual model can be used to examine the decision-making process of individuals as they determine whether to undergo predictive genetic testing, which would definitively diagnose their HD status. Afifi and Wiener's (2004) Theory of Motivated Information Management (TMIM) is used in conjunction with Koerner and Fitzpatrick's (2002a) family communication patterns (FCP) as a conceptual model to examine the decision-making process regarding genetic testing of individuals at risk for HD. FCP allows insight into the family communication practices surrounding HD and the related predictive genetic testing and how these practices may influence the individual's decision-making process. TMIM is used to examine the decision-making process explicitly regarding a chosen information management strategy (i.e., undergoing the predictive genetic test for HD). The proposed conceptual model provides insight into the relationships between family communication and these decision-making processes. Also, the conceptual model combines TMIM and FCP in a unique way that allows the examination of both individual and family communication.

**Poster 16 - Disinhibition of GABAergic neurons in Brodmann's Area 9 compared to surrounding Brodmann areas in schizophrenic and normal human controls**

Amy Dupper

College of Arts & Sciences, Kent State University

One defining characteristic of human evolution is the dramatic increase in brain size compared to body size. However, this rapid encephalization may have been accompanied by some negative consequences. One putative consequence is schizophrenia, which reduces the fitness of the individual but continues to remain prevalent in 1% of the human population worldwide (Crespi et al. 2007). Recent research has indicated that many symptoms of schizophrenia are associated with cortical disinhibition (Carlsson 2006). Inhibitory processes are responsible for focusing on specific tasks and blocking out excess signals. This study focuses on a subset of GABAergic neurons in Brodmann's area 9, an area that is implicated in auditory hallucinations as revealed by fMRI (Lawrie et al. 2002). Specifically, a subset of interneurons expressing calbindin that co-localize with GABAergic neurons will be identified using immunohistochemistry in order to determine neuronal density. The density of GABAergic neurons in BA 9 will then be compared to those of surrounding areas (BA 41, BA 46, and BA 44) to determine if there is selective disinhibition within BA 9, which might contribute to deficits in language and auditory processing (Chance 2005).

**Poster 17 - Nurse perceptions of returning to school: Barriers and motivations**

Wendy Sarver

College of Nursing, Kent State University

Background: Research demonstrates benefits of BSN-prepared nursing staff. Yet only 34% of nurses nationally have BSNs. National organizations including IOM and ANCC, recommend 80% BSNs by 2020. To achieve recommendations, information needed not only on barriers and motivators for returning to school, but also on the average timeline for BSN completion from initial licensure. Aims: Identify perceived barriers, motivators, and benefits for BSN completion among nursing staff at an urban academic medical center. Identify average years from initial licensure to BSN completion. Methods: Cross sectional anonymous survey distributed to RNs employed within our institution via emailed survey link. Survey contained items on barriers, motivators, and benefits based on extensive literature review. Additional data gathered on BSN completion time. Results: N=332, 93% female, 70% inpatient RNs, 68% providing direct clinical care. Biggest barriers: time commitment, expenses for book/supplies. Motivators: tuition reimbursement, length of program. Perceived benefits: expanded knowledge, job opportunities. Average time to BSN completion 2.66 years. Most nurses returned after practicing 9.1 years. Implications: Planned programs to encourage BSN completion: basic computer classes, introductory to online learning courses, creating a central education webpage for nurses.

**Poster 18 - ZN-Angiogenesis Inhibitor**

Haiwa Wu

College of Arts & Sciences, Kent State University

Tumor angiogenesis, new blood vessel formation induced by cancer cells, is a rate-limiting step in cancer growth and metastasis, and therefore an excellent target for therapy. Copper is a co-factor for more than a dozen key angiogenic promoters essential for cancer angiogenesis. We develop a nanoparticle-based drug to selectively sequester copper in order to disrupt angiogenesis, resulting in inhibition of tumor growth and metastasis.

**Poster 19 - Pregnant and using: An exploratory qualitative analysis of prescription opioid abuse during pregnancy**

Allison Thomas and Amy Beck

College of Public Health, Kent State University

Pharmaceutical opioid abuse (e.g., pain medication) has increased dramatically over the past several years in the United States. As a result, hospitals and drug treatment agencies across the state have seen a similar increase in women addicted to prescription opioid drugs during pregnancy. While studies indicate that drug use during pregnancy has several potential negative impacts and increased healthcare costs, little is known regarding the specific association between pharmaceutical opioids and pregnancy. Current or recently pregnant opioid-abusing women were recruited from a local drug treatment program to participate in a face-to-face semi-structured qualitative interview. Drug use and mental health history, health services utilization, perceptions of law and psychiatric disorder were assessed. Findings of this preliminary exploratory analysis are presented and discussed in terms of their implications for public health and public health policy.

### **Poster 20 – The culture of self-care in an online learning environment by nurse educator graduate students**

Ala'a Dalky, Carol Sedlak, Tina Saunders, Peggy Doheny, and Homood Alharbi

College of Nursing, Kent State University

Nursing students and nurse educators experience stress. Literature is abundant on stress reduction and self-care for students but there is a paucity of literature on nurse educators developing their self-care. This faculty team was inspired to be innovative by addressing self-care practices in an online learning environment with graduate nurse educator students who will be our future educators. Using self-care behaviors can result in positive experiences and improved commitment for promotion of self-care. Sixteen graduate nurse educator students shared perceptions about self-care activities. Students completed a self-care self-assessment survey, read journal articles, and dialoged on a week-long class discussion board. Data analysis involved reviewing compiled de-identified data, coding, analyzing, and comparing the data to identify major concepts and themes. Analysis led to describing factors/components that make planning and teaching self-care in nurse educator students successful. Themes included: learning to develop a sense of life balance (academic and personal life); dealing with barriers to personal self-care; having good intentions for practicing self-care behaviors; and determining how to encourage self-care among students in an online environment. Nurse educator graduate students are in an ideal position for learning to develop awareness for inspiring personal self-care as well as serving as self-care role models.

### **Poster 21 – John Sloan and Stuart Davis in Gloucester: 1915-1918**

Kely Suredam

College of the Arts, Kent State University

John Sloan and Stuart Davis summered in Gloucester, Massachusetts from 1915-1918 at the Red Cottage. Their time spent in Gloucester was used to experiment with new European styles that emerged from the 1913 Armory Show. Before summering in Gloucester, both artists belonged to the Ashcan School in New York, led by their teacher, Robert Henri who taught them to paint the world around them. As a result, they painted realistic and unconventional subject matter and their palettes were dark and saturated. Hardesty G. Maratta's color theory, a palette of premixed colors, with a chromatic circle, which guided artists in choosing hues, the Armory Show, and the landscape and pristine light of Gloucester provided them with new inspiration, which altered their art. Both artists lighten their color palettes and painted panoramic views. Even though they painted the same scenery and shared the same inspirations, their oeuvres were distinctly different. Sloan painted portraits, landscapes, and genre scenes, while Davis painted landscapes and Cubists views of the Gloucester scene, including picturesque and mundane settings. This presentation discusses my research in Gloucester and how its pristine landscape inspired Sloan and Davis.

### **Poster 22 – Thermal alteration of Hopewell raw materials corresponding to artifacts recovered from Mann Mound 3**

Sara Hoffhaus

College of Arts & Sciences, Kent State University

The Mann Site in Posey County, Indiana is one of the largest, most complex, and least understood archaeological earthworks sites in the United States. The Hopewell occupation at this site, contemporaneous to the Hopewell phenomenon in Ohio, ca. 2000-1600 B.P., consists of a large village and a series of ceremonial enclosures and mounds. The largest mound at the Mann Site, mound 3, when excavated by amateur archaeologist, Charles Lacer, produced a large quantity of destroyed stone, metal, and bone artifacts which had been burned at extreme temperatures before they were deposited into pits within the mound. The purpose of these items and the processes which led to them being deposited in the pits remains unknown. This poster will address the outcome of an experiment which was conducted as an effort to better understand the process of burning and destroying these artifacts. The experiment involved burning raw materials, identical to those deposited in Mound 3, at varying temperatures and examining their patterns of breakage and other types of alteration caused by the heat. This poster will illustrate how the results of the experiment provide insights into the ceremonial activities of the Hopewell people.

### **Poster 23 – Framing The New Soldier: How American newspapers frame the post-9/11 military service member**

Laura Fong

College of Communication & Information, Kent State University

News media, film, non-fiction, and pop culture have labeled post-9/11 military service members as different from those who have served in wars past, however there is no research to either support or deny the framing of this particular group of individuals. Although much research has been done on how the media frames events, ideology, and politics, the news framing of individuals has rarely been studied. This project applies Robert Entman's cascading activation model to the news framing of U.S. servicemen and women. JMC graduate student Laura Fong coded a 10% sample of articles randomly selected from a 12-month period to discover the most common themes about these service members. The news articles were selected from The Wall Street Journal, The New York Times, and The Washington Post. These findings will be presented in a summary of the dominant frames, both positive and negative. Other findings of note will be presented, including common sources of the frames, the different dominant frames in different story forms (feature, news, editorial, blog or web news) as well as notable differences in the dominant frames in each of the three newspapers included in the study.

## **Poster 24 – What music tells us about ourselves and our cultural experience**

Mary L. Tuck

College of Arts & Sciences, Kent State University

What is it about music that reveals to us our humanness? Why do we do what we do in our cultures? Is there a way that science and the humanities can work together to help reveal these secrets? Today, more than ever, there is awareness that multidisciplinary collaboration will help move all our fields forward. Psychology, neuroscience, anthropology, semiology (to name just a few of the fields involved) are sharing a common dialogue through music. Ethnomusicology, with a multidisciplinary approach as one of its hallmarks, uses the tools of its sister disciplines to look at ourselves at home in our cultural traditions through the lens of music.

What a community holds as sacred and how that experience is communicated and translated into our daily experience is pointing to some potential human universals. The idea of a shared experience is at the very core of our existence and music is an immediate, creative and evolving partner to that experience. Art moves us along our evolutionary path. Today, we will look at the science in the spiritual practice of kirtan (call and response accompanied singing) to understand ourselves in both a reflective and reflexive way.

# Doctoral Poster Presentations

## **Poster 25 – Efficiencies of identifying interacting genomic regions using evolutionary rate co-variation method using different number of sequences**

Madara Hetti Arachchilage, Porsha Frazier, and Helen Piontkivska

College of Arts & Sciences, Kent State University

The rapid rate of mutations in HIV-1 leading to escape from the immune system and drugs remains a major challenge in development of effective vaccine. We showed earlier that highly conserved regions from different HIV-1 genomic regions that frequently co-occur together - and likely interact with each other - can serve as potential targets for multi-epitope vaccines (e.g., Paul and Piontkivska, 2010). HIV-1 Reverse Transcriptase and Integrase enzymes are responsible for catalyzing the essential steps of reverse transcription and integration, respectively. They also appear to interact with each other. A new method was recently proposed to identify physically or functionally interacting protein pairs based on evolutionary rate co-variation (Nathan et al, 2012). However, it is unclear how well this method will work when the extent of sequence divergence is relatively small and/or the number of sequences used is large. In this simulations study we examine efficiencies of identifying interacting pairs using datasets of various sizes by resampling available HIV-1 Pol gene sequence data. Our results show that correlation coefficients tend to be higher when the rates of nonsynonymous substitutions are used compared to the branch length estimates that also take into account synonymous changes.

## **Poster 26 – Controlled release of doxorubicin derivative in tumor cells by ternary gold nanoparticle system**

Nathan Beals

College of Arts & Sciences, Kent State University

A ternary drug system composed of gold nanoparticles (AuNP), hyaluronic acid (HA), and doxorubicin (Dox) was developed to improve the targeted delivery of doxorubicin to tumors overexpressing CD44 receptors. The naturally occurring glycosaminoglycan, hyaluronic acid, utilized to target CD44 receptors and a doxorubicin derivative (MP-Dox) were attached to a 10 nm gold nanoparticle. MP-Dox was synthesized by reacting a thiolated Schiff base linker to create an acid labile hydrazone bond. This acid labile release takes advantage of two drug-releasing mechanisms, I) the presence of intracellular glutathione releases MP-Dox from the AuNP and II) the acidic condition of the lysosome cleaves the acid labile bond. We found controlled drug release in the presence of acidic pH (pH 4.7) and 10 mM glutathione with a 7.5-fold increased release rate compared to the control conditions (pH 7) and almost a 5-fold increase compared to conditions with just acidic pH or 10 mM glutathione individually used. Intracellular compartmental uptake in the cancer cell line A2008 was studied by using lysotracker staining showed a significantly increased accumulation of MP-Dox in the lysosome compared to the mitochondria.

## **Poster 27 – Prior exposure to chronic stress sensitizes depressive-like behaviors in fisher 344 rats when re-exposed to stress**

Jennifer Remus and Destiny Jamison

College of Arts & Sciences, Kent State University

Major depression is a debilitating disorder, characterized by feelings of worthlessness, persistent sadness and lack of motivation. Depression is also recognized to be a chronic, recurrent disorder which can involve multiple episodes. The clinical literature finds that individuals who experience one episode of depression are more likely to have a second occurrence. This likelihood is increased with each passing episode. The current study aimed to develop an animal model of recurrent depression. We hypothesized that animals with a prior exposure to chronic mild stress would be sensitized to future stressors, causing the animals to display depressive-like behaviors more rapidly or to a greater extent. Fisher 344 rats were exposed to the chronic mild stress paradigm for 35 days or remained in their home cage as control animals. Following the 35 days, animals went through a recovery phase of 20 days where no stressors were present. After the 20 day recovery period, animals were re-exposed to the chronic mild stress paradigm for 15 days. Our results indicate that animals previously exposed to the chronic stress show a greater fall in sucrose intake during the second exposure than the first exposure.

## **Poster 28 – Oxytocin receptor distribution and onset in the developing mouse brain**

Steven Tamborski

College of Arts & Sciences, Kent State University

Recent studies suggest that the neuropeptide oxytocin (Oxt) may be important to the organization of the neural circuitry that regulates adult male aggressive behavior. Specifically, male Oxt knockout (Oxt  $-/-$ ) and male Oxt receptor knockout (Oxtr  $-/-$ ) mice have heightened aggressive behavior in adulthood, which is thought to be due to an absence of Oxt signaling during development. These data contrast with that from male forebrain specific Oxtr knockout mice, in which the Oxtr gene is excised 21-28 days after birth and have normal male aggressive behavior. Based on these data it has been hypothesized that fetal exposure to Oxt is necessary for normal displays of aggressive behavior in adulthood. Currently, there have been no studies in mice that have quantified Oxtr protein in the developing mouse brain. The purpose of this study was to use Oxt receptor autoradiography to determine when during embryonic development the Oxtr can be visualized. Brains from male and female mice were collected on several embryonic (E) time points and processed for receptor binding using a radiolabeled Oxtr antagonist. Results from the autoradiography show that the Oxtr is first present on E16 in the ventricular zone as well as the amygdala.

## **Poster 29 – Stochastic vs. deterministic assembly of aquatic invertebrate communities in permanently flooded and intermittently dry wetlands**

DeShawn Johnson

College of Arts & Sciences, Kent State University

A current debate is whether community composition is primarily structured by deterministic (e.g. Niche theory) or stochastic factors (e.g. Neutral theory). Some have suggested that the importance of deterministic vs. stochastic factors varies due to the harshness of environmental conditions. Communities in harsh conditions are theorized to assemble deterministically producing similar species compositions among sites, while communities in benign conditions should assemble stochastically producing dissimilar compositions. We tested this by sampling aquatic invertebrates in ten wetland mesocosms (10 m X 20 m in size and 1 m deep). Twice in the summer, we dewatered five mesocosms (Harsh treatment) and did not dewater the other five (Benign treatment). We assumed that only species adapted to survive dry periods would persist in Harsh treatments, and these communities would have a greater similarity among mesocosms than in Benign treatments. Hierarchical clustering and non-metric dimensional scaling detected distinct communities between Harsh and Benign treatments. Common taxa in Harsh treatments were Cladocera, Physidae, Coenagrionidae, and Hydrachnidia, while Copepoda, Ostracoda, Ceratopogonidae, and Chironomidae were common in Benign treatments. Furthermore, communities were strongly similar among mesocosms in Harsh than Benign treatments. These results suggest that communities assembled deterministically in Harsh environments and stochastically in Benign environments, which supports both niche and neutral models of community assembly, respectively.

## **Poster 30 – The impact of aquatic vegetation on sound transmission in wetland habitats**

Adrienne Hopson

College of Arts & Sciences, Kent State University

There have been an increasing number of investigations into the impact of anthropogenic noise on different types of habitats. Previous research has shown that anthropogenic noise can mask bioacoustic sounds in the ocean, and that terrestrial organisms alter calling frequencies when calling in areas of high traffic noise. However, there has been little research into the impact of anthropogenic noise on wetland habitats. To investigate how anthropogenic noise might impact the aquatic areas of a wetland, it is important to answer the question of how sound moves through the habitat. To begin investigating this topic, I played a pre-recorded sample of a variety of sound types and frequencies into wetland mesocosms that had varying levels of aquatic vegetation density. Results/Conclusion Analysis of the pre-recorded sound sample experiment showed a significant difference in the frequencies that traveled through clear vs. heavily vegetated wetlands. Those wetlands with a high plant density showed a reduction in the overall frequencies that traveled through the habitat. Furthermore, higher frequencies had a greater decline than lower frequencies. Some frequency levels were completely blocked, especially at greater distances.

## **Poster 31 - Exploring kinetic scenarios of allosteric transitions in N and C-terminal domains of calmodulin**

Prithviraj Nandigrami

College of Arts & Sciences, Kent State University

Although the two domains of Calmodulin (CaM) are topologically similar, they differ in structural flexibility, stability, and calcium binding affinity. Our coarse-grained simulations of the open/closed conformational transitions in Calcium-free Calmodulin (CaM) suggest kinetic scenarios in which the transition mechanisms for the two domains are distinct as well. Both domains have the same qualitative thermodynamic mechanisms: a “low temperature” two-state mechanism in which the domain remains relatively structured throughout the transition, and a “high temperature” mechanism involving a partially folded, unstable intermediate in the transition landscape. Under the same simulation conditions, the N-terminal domain (nCaM) exhibits two-state behavior, while the C-terminal domain (cCaM) populates the partially folded intermediate. The simulated transition rate for cCaM is much smaller due to the transient unfolding and refolding along the transition route compared to the two-state transition rate for nCaM. Differences in transition rates for the Calcium-free open/closed transition could explain measured binding rates of Calcium for the different domains. For example, slower conformational kinetics caused by the partially folded intermediate may bias cCaM towards a conformational selection binding mechanism, while nCaM maintains induced fit binding under some range of calcium concentration. Here, we explore such binding scenarios qualitatively.

### **Poster 32 - Sensory hairs in the bowhead whale (*Balaena mysticetus*) and spotted dolphins (*Stenella attenuata*)**

Summer Drake

College of Arts & Sciences, Kent State University

The bowhead whale (*Balaena mysticetus*) possesses about 250 hairs on the tips of the lower and upper jaw; they also display a row of five to eight hairs caudal to the blowhole, and these hairs have previously been identified as mechanoreceptive. Odontocetes are naked except for about ten hairs implanted on either side of the rostrum of the fetuses, but these are lost in adults. Vibrissae may detect fluid flow around the body, and bowheads might be able to detect clouds of krill by the peculiar airborne odor krill releases when it feeds on phytoplankton. However, olfaction is not a directional sense, and the wind direction would need to be assessed in order to locate the food source. It is here the vibrissae could play an important role: they may function as weather vanes, relaying the wind direction to the whale. Bowhead whiskers were investigated using histology, immunohistochemistry, and gross morphology, with particular attention paid to the differences between hair near the blowhole versus hair on the upper and lower lip. The follicle-sinus complex surrounding the hairs suggest a mechanoreceptive role, and the hairs near the blowhole are thicker than the hairs on the rostrum and jaw.

### **Poster 33 - Mitochondrial Dysfunction induces neurite degeneration in neuroblastoma cells and decreases N-acetyl aspartate and acetate availability for myelination in multiple sclerosis brain tissue**

Shuo Li

College of Arts & Sciences, Kent State University

Multiple sclerosis (MS) is an inflammatory demyelinating and neurodegenerative disease of the central nervous system (CNS) in which the degree of disability correlates with the level of damage (demyelination) to neurons and axons. It has been found that the neuronal mitochondrial metabolite N-acetyl aspartate (NAA) is decreased in MS and that this decrease correlates with the degree of disability. In this study, we establish a link between mitochondrial activity, the generation of NAA, and neurite degeneration in neuroblastoma cells. In addition, decreased NAA in MS postmortem gray matter is shown to correlate with decreased availability of acetate for myelination in adjacent white matter. These results suggest a novel mechanism in which mitochondrial dysfunction in neurons can lead to lower levels of NAA and reduced availability of acetate necessary for myelin synthesis.

### **Poster 34 - Planning and implementing global health experiences to enhance cultural competence.**

Homood Alharbi, Carol Sedlak, Peggy Doheny, and Barbara Yoost

College of Nursing, Kent State University

**Problem:** Developing an interdisciplinary study-abroad experience in Geneva, Switzerland with nursing and public health students can serve as an innovative method for increasing global health awareness and cultural competence. A transcultural study-abroad experience needs to be carefully planned to provide a constructive learning environment in which students can develop a knowledge base that supports integration of new experiences into their understanding of nursing, global health, and cultural competency. **Methodology:** This descriptive study involved use of existing data from 19 students (10 baccalaureate nursing students, 9 public health students), two nursing faculty, and a School of Public Health Assistant Dean and Undergraduate Student Services Assistant Director. Perceptions about cultural competency was facilitated by lived experiences through attendance at the World Health Assembly in Geneva and colloquia with leaders of International organizations, daily seminar discussions, online discussion postings, and journaling. **Analysis/Findings:** Analysis led to describing factors/ components that make planning and teaching cultural competence successful. Themes included communicating expectations, activities, and schedules among all members of the group prior to, during, and following the experience; organizing details of the global experience; developing ongoing relationships between speakers and faculty, and balancing educational and cultural immersion opportunities.

### **Poster 35 - A geospatial approach to identify risk factors associated with well water quality in rural Haiti**

Andrea Szell, Vanessa Marshall, and Aieshia Brooks

College of Arts & Sciences, Kent State University

More than 3.4 million people die each year from water, sanitation, and hygiene-related causes. Water wells are assumed to be primary sources of safe water if properly located, adequately built and maintained. However, well water quality may not only be altered at the source, but also after collection, during transportation, or at home, during storage. Well water quality assessments have shown that bacteria levels are higher in water stored in the household environment than at the water source. As household water handling and sanitation practices have become key elements in the prevalence of water-borne disease outbreaks in rural slum areas, there is an increasing need for comprehensive tools to identify risk factors associated with well water quality. The purpose of this research is to employ geographic information systems (GIS) based methods to identify physical environmental and behavioral factors that could potentially negatively impact water quality in rural Haiti. Risk factors are assessed based on three different activity spaces including the well environment, the route environment and the home environment, for a more adequate spatial targeting of scarce resource distribution during intervention processes aimed at preserving drinking water quality. Findings support the need for interventions targeted at the social ecological levels.

### **Poster 36 – Assessing land-use patterns using GIS and spatial video on Kutubdia Island, Bangladesh**

Munshi Rahman

College of Arts & Sciences, Kent State University

Change of land cover is a dynamic process that is driven by both natural forces and human activities. Due to natural disasters, scarcity of natural resources, and over population, people often exploit the environment and utilize resources indiscriminately. As a result of both socio-economic and environmental situations, a place may experience severe negative consequence (e.g., ecosystem loss). Kutubdia Island, Bangladesh is highly sensitive due to its geophysical condition and frequent natural disasters. Salinity intrusion through embankment breaching and tidal waves causes salinization problems in the agricultural land of Kutubdia. Agricultural activities (e.g., rice production), salt farming, and fishing are the main economic activities. In recent years due to increasing salinity, salt cultivation became popular to the farmers of Kutubdia and they are producing salt on the land where they used to produce crops (rice and vegetables). At present salt cultivation is practiced all over the island without any land-use planning, which may lead to a severe environmental crisis and food security concerns in the future. This study was an effort to estimate the existing (2012) land-use patterns by using GIS and spatial video to provide a basis for better land-use planning of this island.

### **Poster 37 – Ecologies of understanding in writing studies and the natural sciences: A comparative analysis**

Chris McCracken

College of Arts & Sciences, Kent State University

Many writing studies researchers understand literate and discursive practices as taking place within an ecological framework. Such an approach allows these researchers to account for the complex myriad forces shaping and shaped by writing and speaking. While attempting to synthesize these ecological understandings to frame my own ethnographic study of the writing practices of a group of microbial ecologists, I have located some contradictions between ecological understandings of writing and discourse that should be addressed. My understanding of an ecological framework for writing draws heavily on areas of what I'm calling "metaphorical overlap" between writing studies and the natural sciences. Exposing and exploring these areas of overlap has helped me better understand the utility of ecological perspectives--for writing studies researchers and natural scientists--and I believe it offers a way to attend to the contradictions between ecological frameworks within writing studies.

### **Poster 38 – “Preparing ‘Dual Citizens’ for Tomorrow”**

Uma Krishnan

College of Arts & Sciences, Kent State University

Tinberg and Nadeau(2011), in *Contesting the space between High School in the Era of Dual- Enrollment*, argue about the need to bridge the gap between college and high school, the “dual worlds” that students inhabit, and to establish “a clear understanding among the interested parties as to the core principles, practices and outcomes for first- year college composition”(710). One of the main reasons to establish this understanding is that students are getting caught in the two worlds, the one they are leaving behind and the one they are entering, and are not able to fulfill the requirements of either. Based on this paradigm, the speaker argues that before we reframe the field as Adler-Kassner and Harrington (2010) suggest or bridge the gap as Tinberg and Nadeau argue, this dual enrollment discourse needs to address the rigorous demands and expectations that students will face if they are to be successful in both worlds.

### **Poster 39 – “Oh, This Article is New”: An analysis of graphic representations in computers and composition**

Jessica Heffner

College of Arts & Sciences, Kent State University

By providing a microanalysis developed in a grounded theory approach, this paper traces the major innovations in the representations of data throughout *Computers and Composition*. This analysis seeks to identify developments and transformations in the format and presentation of information throughout the journal. I argue in this presentation that by identifying innovations in representations across a particular journal that we can trace historical change which can eventually lead to the development of an explanatory theory for both cultural and representational changes. This project contributes to the conversation surrounding how the field of writing studies has done research and how that research has been represented in our journals. It is important for the field to have moments of reflection especially regarding how we research, and represent that research. Historical work on the field of writing studies develops information both about the field as well as the particular interest area providing a dual benefit. This work will add to our understanding of the ways in which we have been and are sharing information with each other through published work focusing especially on the representations of data.

#### **Poster 40 - Explaining science policy adoption by a unified model of innovation**

Alireza Raisi

College of Arts & Sciences, Kent State University

This research explains the adoption of science policy in developing countries by applying a unified model of innovation reflecting both internal determinants and diffusion. The result of the large-N study indicates that the adoption of the science policy depends on both internal and external factors. The study examines the impact of the motivation of public officials, resources, presence of other policies and external factors. The resources including the budget, professionalism of the legislatures and bureaucrats, and bureaucratic capacity and also presence of other policies are among determinant of the adopting the science policy. External factors including region and cultural similarity also impact the adoption of science policy. These findings show that the adoption of science policy and the establishment of the science policymaking bureaucracy was part of the general process of the evolution of modern bureaucracy in developing countries. That is, the science policy establishment mirrors much of the rest of the process of building the structure of state in these countries. In this process, states built and enhanced modern bureaucracy as a functional need for governance and development, and international organization's desire to teach science policy finds a home in this internal process

#### **Poster 41 - Getting in the game: A quantitative study of second-year student-athletes' experiences utilizing existing data of the 2010 Sophomore Experience National Survey**

Talea Drummer

College of Education, Health and Human Services, Kent State University

Second-year college students may go through a period in their college experience where they feel left out and left behind. During the first year, students receive so much attention through initiatives that are specific for first-year students. However, in their second year they are left to navigate the remainder of their college experience on their own. Additionally, student-athletes who are in their second year of college have an additional challenge with NCAA eligibility rules and regulations that can determine their fate in their specific sport. This poster will give an overview of the proposed research the researcher is planning to do for their doctoral studies and dissertation to determine if there are significant differences in the second year experiences of a student-athlete and how administrators can assist them through their journey.

#### **Poster 42 - Under pressure: How information anxiety affects traditional and remedial undergraduate students.**

Shelley Blundell

College of Communication & Information, Kent State University

Information anxiety (defined by this researcher as a blend of library anxiety and information technology anxiety) has been shown by numerous researchers in library and information science to affect people negatively in a variety of ways. Specifically, it has been found that those registering high levels of information anxiety experience difficulty in finding, using, and incorporating information into their everyday lives. Although some studies have focused on information anxiety effects in undergraduate students; barely any have focused on the effects of information anxiety on undergraduate students in remedial coursework, or have compared the information anxiety experienced by undergraduate students in traditional coursework to that experienced by undergraduate students in remedial coursework. In a pilot study conducted this semester, CCI doctoral student Shelley Blundell asked second-semester freshmen from both traditional and remedial English courses at a state university to respond to a survey measuring information anxiety experienced across a number of domains. Statistical analysis will show which domains cause both groups of students the most information anxiety, as well as highlight key differences between the two groups. Based on the study's findings, suggestions for assisting both groups to overcome information anxiety will be presented.

#### **Poster 43 - The role of relationship satisfaction and perceived discrimination among Black/White interracial couples**

Jessica Burke

College of Arts & Sciences, Kent State University

The existing research on the relationship quality of interracial couples has generally found that such couples had less quality compared to same race couples. Some research on discrimination and interracial relationships have found that such couples endure stares, negative comments, and racial slurs anywhere from walking down the street to eating a meal in a restaurant (St. Jean 1998; Killian 2003), and experience more negative reactions from family and strangers, and greater stigma is found for couples characterized by a white wife and a black husband. The data for this research will come from the National Survey of American Life (NSAL). The focus of this study is comparing Black/White interracial couples (n=82), Black/Black same race couples (n=1750), and White/White couples (n=452). White same race couples have higher levels of relationship satisfaction compared to black same race couples and black/white interracial couples. However, that relationship is no longer significant once perceived discrimination is added to the model. In this data, perceived discrimination is a significant predictor of relationship satisfaction where lower levels of discrimination predict higher levels of relationship satisfaction.



**Poster 44 - A daily process model examining different forms of avoidance coping predicting changes in subsequent PTSD symptoms**

Bryce Hruska

College of Arts & Sciences, Kent State University

Research consistently finds an association between avoidance coping and PTSD symptoms (PTSS). However, existing research has not considered how different forms of avoidance coping may be related to the development of PTSS, and how these different forms may operate on a daily basis to predict changes in daily PTSS in recent trauma victims. Using experience sampling methodology, the present study examined how daily cognitive and behavioral avoidance coping experiences occurring earlier in the day predicted changes in PTSS occurring later in the day in N=40 recent trauma victims. Six weeks post-trauma, participants completed the Short Form PTSD-Checklist and avoidance coping subscales of the Coping Responses Inventory every morning, afternoon, and evening for a total of 14 days. Results revealed that within participants, behavioral avoidance coping earlier in the day predicted increases in PTSS later in the day ( $\gamma = 0.36$ ,  $SE = 0.06$ ,  $p < 0.001$ ); however, this relationship was not present for cognitive avoidance coping ( $\gamma = 0.03$ ,  $SE = 0.04$ ,  $p = 0.33$ ). These findings highlight the importance of targeting behavioral avoidance coping in interventions designed to reduce PTSS in recent trauma victims.

**Poster 45 - Disease-related collaboration and emotional well-being among couples coping with type 2 diabetes**

Rachel Hemphill

College of Arts & Sciences, Kent State University

Among couples, collaborating to cope with one partner's chronic disease is often related to better emotional well-being for both patients and spouses. Theorists have suggested, however, that emotional benefits of collaboration may be stronger for partners who appraise the patient's disease as their shared responsibility to manage, compared to partners who appraise disease management as the patient's responsibility alone. Our short-term longitudinal study of 126 patients with type 2 diabetes and their nondiabetic spouses examined 1) whether disease-related collaboration (e.g., joint problem-solving, sharing concerns) during the past month was related to partners' emotional well-being during the following month and 2) whether these relationships were moderated by partners' appraisals of diabetes as a shared versus patient responsibility. Multilevel models indicated that collaboration was related to poorer mood for patients in couples who appraised diabetes as the patient's responsibility, but was unrelated to mood for patients in couples who appraised diabetes as their shared responsibility. Collaboration was unrelated to spouses' mood, but was positively related to their diabetes-specific distress, regardless of whether partners viewed diabetes management as shared. Findings suggest that disease-related collaboration is not always beneficial for emotional well-being, especially when partners do not view diabetes management as a shared responsibility.

**Poster 46 - Substance use moderates the effects of PTSD and depression on suicidality among minority lesbian, gay, and bisexual adolescents and young adults**

Brian Smith

College of Arts & Sciences, Kent State University

Adolescents and young adults who are lesbian, gay, or bisexual (LGB) are more likely to abuse alcohol and drugs and have posttraumatic stress disorder (PTSD) and/or depression than their heterosexual peers. LGB youths are also 2.5 times more likely to commit suicide. Substance use (SU), PTSD and depression are all risk factors for suicidality. The current study examined the incremental validity of SU, PTSD, and depression to predict suicidality in a sample of 68 primarily African American LGB adolescents and young adults. The extent to which SU moderates the relationships between PTSD/depression and suicidality was also examined. Results of hierarchical logistic regression analyses indicated that that SU and depression added incremental validity to the prediction of attempted suicide, but PTSD symptoms did not. SU moderated the relationship between PTSD and depression on suicidal ideation. Simple slope analyses revealed that higher SU coupled with PTSD or depression predicted suicide ideation. These findings indicate that substance use is a primary contributor to suicidality when it exists alone or in combination with PTSD or depression, underscoring the importance of integrating substance use treatments with PTSD/depression treatments to reduce suicide risk.

**Poster 47 - An examination of hair cortisol levels predicting the development of PTSD symptoms following a recent trauma.**

Maria Pacella, Bryce Hruska, and Douglas Delahanty

College of Arts & Sciences, Kent State University

Hair cortisol analysis represents a novel, non-invasive method for retrospective assessment of cortisol. However, the few studies that have examined hair cortisol in relation to PTSD/PTSD symptoms (PTSS) have reported mixed findings (e.g., lower and higher levels). To further elucidate this relationship, the current study examined hair cortisol in 27 adults approximately 2-weeks following a traumatic event. We collected 3cm hair samples from the scalp, and participants completed the Posttraumatic Diagnostic Scale (Foa et al., 1997) to assess trauma history and initial PTSS. Participants also completed the PTSD Checklist (Weathers et al., 1993) 6-weeks post-trauma. Given that 1cm sample of hair reflects past month cortisol levels, this hair sample reflects both pre-and peri-trauma cortisol levels. After controlling for gender, trauma history, and initial PTSS at baseline, hierarchical regression analyses revealed that higher hair cortisol levels predicted higher PTSS 6-weeks post-trauma ( $\beta = 0.43$ ,  $SE = 0.71$ ,  $p = .016$ ). Further analyses revealed that hair cortisol was most predictive of the avoidance symptom cluster ( $\beta = 0.57$ ,  $SE = 0.40$ ,  $p < .01$ ). These results suggest that high pre-and peri-trauma hair cortisol may serve as a biological risk factor for the development of PTSS.

### **Poster 48- Presynaptic inhibition is required for precision of long-term memory**

Patrick Cullen, Brooke Dulka, and Samantha Ortiz

College of Arts & Sciences, Kent State University

It has been well established that memory for context becomes less specific with time, with animals generalizing fear from the training context to a novel context. Though much attention has been given to the neural structures that underlie the long-term consolidation of a context fear memory, very little is known about the mechanisms responsible for the maintenance of memory precision. Results from the current study indicate that presynaptic inhibition is required for the maintenance of a precise memory and identify GABAB(1a) receptors as a potential mechanism underlying the loss of a contextually precise memory.

### **Poster 49- Cognitive deficits are associated with poorer simulated driving in older adults with heart failure**

Michael Alosco

College of Arts & Sciences, Kent State University

Objective: Heart failure (HF) patients appear at risk for unsafe driving. For instance, cognitive impairment is prevalent in HF and past work in other medical samples has shown cognitive dysfunction to be an important contributor to driving performance. This study examined the association between cognitive function and driving simulation performance in patients with HF. Methods: 18 persons with HF (67.72; SD = 8.56 years) completed a neuropsychological test battery assessing global cognition, attention/executive function, memory, and motor function. All participants then completed the Kent Multidimensional Assessment Driving Simulation (K-MADS), a driving simulator scenario with good psychometric properties. Results: Relative to controls, HF patients exhibited worse performance on the driving simulation, including greater number of collisions, centerline crossings, and road excursions ( $p \leq .05$  for all). Partial correlations showed worse attention/executive and motor function were associated with poorer driving simulation performance across several indices reflective of driving ability, including centerline crossings, number of collisions, among others;  $p \leq .05$ ). Conclusion: This study shows reduced cognitive function was associated with poor simulated driving performance in HF. If replicated using behind-the-wheel testing, HF patients may be at elevated risk for unsafe driving and routine driving evaluations in this population may be warranted.

### **Poster 50- When I'm with you I feel like me: Social relationships and experience of authenticity and meaning in life**

Brian Don

College of Arts & Sciences, Kent State University

Two experimental studies are currently examining how social relationships (particularly romantic relationships) influence the experience of meaning in life and authenticity. Furthermore, we are also exploring the mechanisms by which relationships may influence meaning and authenticity, such as through purpose, efficacy, value, and self-worth. Data collection is ongoing, but preliminary results suggest close relationships increase judgments of meaning in life and authenticity.

### **Poster 51- Medication alarms for medication reminding in heart failure: Overdose or snooze?**

Emily Gathright and Carly Goldstein

College of Arts & Sciences, Kent State University

Introduction For heart failure (HF) patients, medication adherence remains a complex problem. Although reminder systems offer a potential for improving adherence, systems with alarms may increase apparent overdosing. Purpose We explored apparent overdosing using an alarmed pillbox as part of a pilot randomized clinical trial. Methods Participants were 30 (63% male) predominately Caucasian (83%) HF outpatients ( $69 \pm 11$  years). They were randomized to alarmed or silent conditions and given a pillbox equipped with auditory and visual alarms. Opening the bin recorded a medication taking event and silenced applicable alarms. 4 HF medications were monitored for 28 days. An overall overdose rate for each individual was created. Results Controlling for gender, completer analyses indicated a trend toward more apparent overdoses in the alarm (13.9%) compared to the silent condition (6.5%),  $F(1,25) = 3.93$ ,  $p = .059$ . Conclusion When medication taking is defined as bin openings, some patients may have incorrectly taken extra pills. However, when reminder alarms are used, patients may open the bin to silence alarms without taking a pill. We cannot differentiate between true overdoses and bin openings to silence the alarm followed by later medication taking. Future studies should account for this possibility when using alarmed devices.

### **Poster 52 - Paradoxical enhancement of fear expression and extinction deficits in mice resilient to social defeat**

Jeremy Meduri and Jeffrey DaMert

College of Arts & Sciences, Kent State University

Recent chronic stress models demonstrate individual differences in responses to social stress. In particular, mice have been characterized as being either "susceptible" or "resilient," in which resilience is associated with lasting adaptations across several physiological and behavioral measures, including social behavior. Whether these phenotypic differences in the response to social stress are associated with similar phenotypic differences in conditioned fear remains unknown. Here, we investigated the effects of social defeat on emotional and fear-related behaviors with a focus on identifying how individual differences in the response to social stress are associated with differences in anxiety, fear, and learning tasks. Social defeat produced long-term effects on social interaction with no apparent changes in anxiety-like behavior. Susceptible mice extinguished fear at rates slower than non-defeated controls. However, resilient mice had enhanced fear expression and deficits in fear extinction as well as extinction retention. Resilience was also associated with enhanced reversal learning in the Morris water maze task. Thus, our data suggest that phenotypic resilience based on social interaction measures do not necessarily generalize to other fear-related tasks and may represent more of a specific behavioral coping strategy to social stress.

### **Poster 53 - Social support from athletic trainer and symptoms of depression and anxiety at return-to-play**

Julie Schaefer and Ginger Yang

College of Education, Health and Human Services, Kent State University

Social support plays a key role in the psychological aspect of injury recovery in athletes. Certified athletic trainers (ATs), involved in the daily tasks of injury prevention, recognition, and treatment of injury, are in a unique position to offer such support. Few studies, however, have examined the association between social support from ATs and psychological outcomes during injury recovery. The purpose of this study was to examine the relationship of social support received from ATs during injury recovery, including satisfaction with such support, and reported symptoms of depression and anxiety at return-to-play among a cohort of collegiate athletes. Data regarding these factors was collected for 594 injuries in 387 collegiate athletes from two Big Ten Conference universities. Results suggest that the majority of athletes (84%) seek social support from ATs during injury recovery. Athletes who were very satisfied or satisfied with such support were 87% and 73% less likely, respectively, to experience symptoms of depression and 88% and 78% less likely to experience anxiety at return-to-play. Our findings support a buffering effect of social support from ATs on athletes during injury recovery and stress the importance of incorporating psychosocial competencies in training programs.

### **Poster 54 - Feasibility of implementing a pediatric emergency department based head injury prevention program**

Lorriane Odhiambo and Jingzhen Yang

College of Public Health, Kent State University

Head injuries in children often occur during sports and recreation. Emergency departments may offer a unique opportunity to teach parents about preventing head injuries. This pilot study assessed the feasibility of a pediatric emergency department (PED) based head injury prevention and management program. Participating parents were randomly assigned either to an intervention group (n=14) or a control group (n=10). Data was collected for both groups at baseline and 6 months after the intervention. Additional data was collected from the intervention group at 24-48 hours, 1, and 3 months after the initial visit. A total of 24 parents were enrolled, 20 mothers and 4 fathers at an average age of 32.9. Twelve boys and 12 girls participated. Of those enrolled, 13 parents (56.5%) correctly answered all 9 questions about concussions. Intervention parents rated the PED educational session as a 4.63, on a scale of 1 to 5, with 5 being excellent. They also reported the materials were very helpful. In one case, a mother used information learned from the intervention in a real head injury scenario involving her daughter. The results of this study suggest that delivering such programs in a PED is feasible and important in head injury prevention.

### **Poster 55 - The impact of history of cardiovascular disease on the development of chronic kidney disease**

Suparna Navale

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The relationship between chronic kidney disease (CKD) and risk of cardiovascular disease (CVD) has been proven many times, as has the relationship between diabetes, hypertension and development of CKD. The reverse relationship, CVD causing CKD, has been postulated, but has not been studied extensively. This study examined the relationship between history of CVD and CKD, defined by decreased glomerular filtration rate, and the impact of diabetes status. The study was limited to adults age 20 years and older from National Health and Nutrition Examination Survey (NHANES) 2005 – 2010 (n = 17,132). Multiple logistic regression was used to determine the independent relationships between the presence of CKD and the predictor variables (history of CVD, age, sex, race, BMI, hypertension, and diabetes). We found that history of CVD, age, females, obesity, and diabetes all have a significant impact on CKD. Although this study is limited by the cross-sectional nature of NHANES, it does help improve the current knowledge behind the hypothesis that CVD is a risk factor for CKD. Longitudinal studies in cardiac patients should be undertaken to determine the presence or absence of CKD and the association of known risk factors for CVD in the presence of CKD and CVD.

### **Poster 56 - Are patients identified through routine screening of HIV really different?**

Ashley Tillison

College of Public Health, Kent State University

**Introduction:** Routine testing is intended to identify HIV infection earlier. Local testing initiatives have not evaluated if this is occurring. **Methods:** An electronic medical record (EMR) reminder was implemented July 2010 to facilitate routine HIV testing. Chart review was performed for data collection. Demographics and clinical characteristics were collected from the EMRs of newly diagnosed individuals seeking care from 2008-2011. Descriptive statistics were completed to describe the population tested. A t-test was performed to determine a statistical difference in t cell count and logistic regression statistics were performed to measure differences between the two groups with the outcome of interest being timing of the test. **Results:** 105 individuals were newly diagnosed with a mean age of 38 years, 51% were African-American, 68% male. Logistic regression showed that individuals who had an unknown risk factor compared to a known risk factor (OR=3.35) or were not previously tested compared to those previously tested (OR=5.75) were more likely to be tested after the implementation of the EMR reminder. **Discussion:** Though no difference was seen in average age or T cell count, routine screening identified patients who may not have been tested and would likely have not been tested until symptomatic.

### **Poster 57 - Alcohol use disorders: Prevention for the elderly population**

Vanessa Marshall and Eric Jefferis  
College of Public Health, Kent State University

Introduction: Alcohol use disorders among older adults are the fastest growing public health problem in the US. The purpose of this paper is to review and assess the existing body of literature on the primary prevention of alcohol use disorders among the elderly. Methods: A systematic review was conducted to identify the relevant literature on prevention programs for older adults (aged 55 and older) with alcohol use disorders using a creation of individualized search strategies from electronic databases. Results: Findings corroborate that alcohol use disorders have a high prevalence among older adults. Many intervention approaches used were based on the stages of change theory and provided some empirical support for demonstrating efficacy. The sample size varied for each of the prevention programs ranging from 110 to 6093 older adult participants. Moreover, there was a significantly high attrition rate for some of the programs. Conclusions: Depending on the health behavior, frequently more than one theory is needed to effectively address the issue of health behavior, promotion, and prevention across the life span for alcohol use disorders. Future research is needed to help guide prevention, intervention, and treatment programs at state, federal, and local levels among populations.

### **Poster 58 - Factors associated with contraceptive choices among United States adolescents: Are there racial disparities? An analysis of the Youth Risk Behavior Surveillance System (YRBSS)**

Madonna Igah

College of Public Health, Kent State University

Even with the various contraceptive methods accessible, teenagers in the United States (U.S.) remain far more likely to give birth than teenagers in other industrialized countries (Kearney & Levine, 2012) and unintended pregnancies remain a significant problem in the U.S. (Finer & Henshaw, 2006). Contraceptive use is one key factor that may be influencing disparities in sexually transmitted infections, unintended pregnancies, and abortion prevalence (Dehlendorf et al., 2011). This study considers the effect of race and ethnic background after examining differences in contraceptive choices among adolescents at a national level. This study utilized the 2011 YBRFS multi-state sample survey data to perform bivariate and multivariate analyses, and examine racial and ethnic differences in the selection of contraceptive method. Data was available for 15425 respondents and analyzed using SAS® software – to assess U.S. adolescents in grades 9-12 who were sexually active. Findings disparities do exist with contraceptive use. Differences were also found by educational grade level, gender, number of sex partners, and drug/alcohol use. Results displayed a distinction between white-nonHispanic, and minority racial/ethnic groups. Further, minority groups were less likely to use contraceptive methods of condoms, birth control pill, depoprovera, withdrawal or another method.

### **Poster 59 - The use of geospatial video to code parcels for predicting risk of exposure from environmental lead**

Laura Schuch, Vanessa Marshall, and Lorriane Odhiambo

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Environmental contamination continues to present risk to human health. The purpose of this project is to determine if visual data collected through geospatial video and Geographic Information Systems (GIS) can be used as a tool to identify properties at risk of high environmental lead levels, from property characteristics like peeling paint and proximity to a former lead smelter factory site. Geospatial video was used to capture physical characteristics of residences in the neighborhood surrounding a former lead smelter in Northeast Ohio. Using GIS, neighborhood parcels were coded according to attributes that are characteristic of lead exposure as found in the geospatial video and county tax data. Coded parcels were compared to tested soil lead levels completed three months prior to video capture. Results of Getis-ord analysis show hot-spots of potential lead exposure based on parcel coding. The limited number of sampled parcels restricts validation of the tool. Foreclosures need to be accounted for because they affect the available data for a residence. More lead sampling is needed to further validate and refine the model; then it could be used as a prediction tool for identifying homes at risk of lead exposure.

### **Poster 60 - Actinomycin D-induced apoptosis and apoptotic volume decrease in HeLa cells: A microscopic study using live fluorescence and transmission-through-dye microscopy**

Neda Kasim and Michael Model

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Live fluorescence microscopy and the newly developed technique, transmission-through-dye microscopy, permits live cell imaging and volume measurements. It provides a means to measure apoptotic volume decrease (AVD), which is an essential characteristic of apoptosis. Using this technique, we examined the effects of actinomycin D- induced apoptosis on HeLa cells. Our results demonstrate that: (1) Apoptosis occurs in two distinct stages: early and late characterized, respectively, by blebbing and a compact shape. (2) Mitochondrial membrane depolarization occurs simultaneously with blebbing, and chromatin condensation occurs 30-90 min later. Caspase-3 and 7 become activated during the late stage. These sequences of events suggest that blebbing is not dependent on caspase-3 and is initiated by a different mechanism. Selective inhibition of blebbing does not affect other apoptotic reactions. (3) Volume increase occurs with bleb formation, followed by AVD (average volume decrease was approximately 40%). (4) Both apoptotic stages show intracellular accumulation of Na<sup>+</sup>. A low-sodium medium prevents apoptosis and the potassium channel blocker, quinine, reduces the proportion of apoptotic cells (P= 0.01). Prevention of apoptosis or AVD does not occur with the other tested ion channel inhibitors (Na<sup>+</sup>, K<sup>+</sup> and Cl<sup>-</sup>).

### **Poster 61 - Validity of borg ratings of perceived exertion during active video game play**

Brandon Pollock

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The purpose of this investigation was to determine the association between RPE scores and heart rate while playing the Nintendo Wii. Healthy adults (N = 13, 53.5 ± 5.4 years old) participated in two exercise sessions using the Nintendo Wii Fit Plus. Borg RPE and heart rate were assessed during the final 30 seconds of the warm up and cool down, as well during the final 30 seconds of play for each Wii Fit Plus game. Correlation analysis combining data from both exercise sessions indicated a moderate positive relationship between heart rate and RPE (r = 0.32). Mixed-effects model regression analyses demonstrated that RPE scores were significantly associated with heart rate (p < 0.001). The average percentage of age-predicted heart rate maximum achieved (58 ± 6%) was significantly greater (p = 0.001) than the percentage of maximum RPE indicated (43 ± 11%). Borg RPE scores were positively associated with heart rate in adults during exercise sessions using the Wii Fit Plus. However, this relationship was lower than observed in past research assessing RPE validity during different modes of exercise (e.g. walking, running) without distracters.

### **Poster 62 - The differences in physical activity and attention in preschool children before and after free play and structured play recess**

Megan Williamson

College of Education, Health and Human Services, Kent State University

The purpose was to assess the amount of physical activity in preschool children during three different recess conditions: free play, structured play and a control condition. Children's attention to instruction and classroom behavior were also assessed. Children wore accelerometers for the duration the school day for three days. Accelerometer counts during the recess sessions and for the entire school day were recorded. Attention to instruction and classroom behavior was also collected. Each recess condition was completed on a separate day, but all during the same week. After all three recess conditions had been complete, the child's preference was asked. Children were more active during the active recess conditions compared to the control condition. However no differences were found between the active conditions. Also, while there were no gains in attention to instruction or classroom behavior, there were also no negative effects. All children preferred either the Structured Play (55%) or Free Play (45%) recess conditions over the control recess condition. Presently both a Structured Play and Free Play recess condition were equally successful in increasing physical activity behavior, had no negative effects on attention to instruction or classroom behavior, and were preferred versus a non-active recess condition.

### **Poster 63 - Validity of handgrip exercise to study vascular function in Parkinson's Disease**

Kylene Peroutky

College of Education, Health and Human Services, Kent State University

**BACKGROUND:** Parkinson's disease (PD) is a degenerative disorder of the central nervous system that often affects motor control. Handgrip exercise is a common modality used to evaluate blood flow and vascular function during exercise; however, the impaired motor control of this population may prevent it from being a valid testing modality. **PURPOSE:** This study was used to validate whether the PD group was capable of performing consistent handgrip contractions over a prolonged duration, across various intensities. **METHODS:** Ten volunteers, 5 with PD and 5 controls performed a four-stage handgrip protocol. Each participant squeezed a handgrip dynamometer once per second for 3 minutes at 4 different intensities. The subjects had real-time visual feedback of the force tracings during the entire protocol as well as a horizontal guideline which represented the target force. **RESULTS:** Statistical analysis indicated that across the entire protocol there was no difference in the percentage of contractions, absolute error at any of the intensity levels, or duration of contraction between the control and PD groups. **CONCLUSION:** The results of this study indicate that the handgrip protocol is a valid method that can be used to evaluate vascular health and blood flow in PD patients compared to controls.

### **Poster 64 - Fibroblast growth factor 8 is required for the formation of the corpus callosum**

Kristina Corella

College of Arts & Sciences, Kent State University

Fibroblast growth factors (FGF) regulate critical signaling cascades that control developmental processes, such as neuronal survival and axonal outgrowth. Here we showed that mice with reduced Fgf8 expression (i.e., hypomorphs) have failed corpus callosum formation. Based on Fgf8's role in axonal guidance, we hypothesized that failed corpus callosum formation is the result of abnormal local Fgf8 signaling through its cognate receptor Fgfr1 during embryonic development. Indeed, Fgfr1 mRNA expression was reduced in Fgf8 hypomorphs in the indusium griseum, a region involved in corpus callosum formation. Furthermore, Fgfr1 mRNA expression was reduced in the so-called glial wedge, which previous studies showed to be important for interhemispheric callosal axonal guidance. Moreover, glial cell number in the glial midline zipper region of Fgf8 hypomorphs was reduced. Together, these data suggest that reduced Fgf8 signaling is further abrogated through the "autocrine" downregulation of Fgfr1. In turn, these cellular changes prevented normal development of midline brain structures that facilitate interhemispheric callosal axonal crossing, and consequently resulting in failed corpus callosum formation. Currently, we are pinpointing when during development the corpus callosum fails to form. These experiments will enable us to elucidate the underlying molecular and cellular mechanisms of Fgf8-dependent corpus callosum development.

**Poster 65 - Glioma stem cells promote brain endothelial cell motility: A new mechanism for the direct interaction of glioma stem cells with endothelial cells**

Monica Burgett

College of Arts & Sciences, Kent State University

Angiogenesis is a feature of malignant glioma. It occurs partly through migration of endothelial cells (ECs), and is driven by microenvironment signals, including a perivascular niche where glioma stem cells (GSCs) reside in the vicinity of ECs. Here we examined the hypothesis that GSCs interact with ECs and promote EC motility. We further sought to determine cell-surface receptors mediating GSC-EC contact and the potential of this interaction on enhancing EC motility. We found that GSCs were localized with ECs in glioblastoma biopsies and discovered that the directional motility and velocity of ECs increased in the presence of GSCs in a migration assay. In a transwell assay, EC migration was enhanced more by the presence of GSCs, compared to GSC-conditioned media. Integrin  $\alpha\beta3$  and L1CAM are upregulated in brain tumors on ECs and GSCs, respectively, and integrin  $\alpha\beta3$  binds the RGD motif in L1CAM. Downregulating integrin  $\beta3$  on ECs inhibited EC-GSC direct contact, as did an RGD peptide. Furthermore, downregulation of integrin  $\beta3$  reduced EC migration only in the presence of GSCs and EC association with GSCs *ex vivo*. These data suggest that EC motility and thereby angiogenesis can be promoted partly through EC-GSC interaction mediated by integrin  $\alpha\beta3$  and L1CAM.

**Poster 66 - Propofol Restores TRPV1 Sensitivity via a TRPA1-, Nitric Oxide Synthase- Dependent Activation of Protein Kinase C Epsilon in Sensory Neurons.**

Pritam Sinha Roy

College of Arts & Sciences, Kent State University

**Introduction:**The intravenous anesthetic, propofol, restores the sensitivity of TRPV1 channels via a TRPA1-, PKC $\epsilon$ -dependent phosphorylation of TRPV1. Our objectives were to determine the mechanism by which TRPA1 stimulation causes PKC $\epsilon$  activation and restoration of TRPV1 sensitivity. **Methods:** Lumbar mouse dorsal root ganglion (DRG) neurons in addition to F-11 cells transfected with cDNA for TRPV1, or both TRPV1 and TRPA1. Intracellular Ca<sup>2+</sup> concentration was measured via fluorescence microscopy. Immuno-blot analysis of the total and phosphorylated forms of PKC $\epsilon$  and TRPV1 was also performed. **Results:** In DRG neurons or F-11 cells containing both TRPV1 and TRPA1, PKC $\epsilon$  inhibition prevented the propofol-induced restoration of TRPV1 sensitivity to agonist stimulation. In F-11 cells transfected with TRPV1 only, propofol failed to induce PKC $\epsilon$  or TRPV1 phosphorylation. However, in F-11 cells transfected with both TRPV1 and TRPA1, propofol increased phosphorylation of PKC $\epsilon$  and TRPV1 that could be blocked with the PKC $\epsilon$  inhibitor peptide,  $\epsilon$ V1-2. Moreover, nitric oxide synthase inhibition blocked propofol-induced restoration of TRPV1 sensitivity as well as PKC $\epsilon$  phosphorylation, and  $\epsilon$ V1-2 prevented the nitric oxide donor, SNAP, from restoring TRPV1 sensitivity. **Conclusions:** These data indicate that the propofol-induced restoration of TRPV1 sensitivity is mediated by a TRPA1-dependent, nitric oxide synthase-dependent activation of PKC $\epsilon$ .

**Poster 67 - By Inhibiting NHEJ DNA Repair, ETS gene fusion proteins enhance PARP inhibitor-mediated radiosensitization**

Payel Chatterjee

College of Arts & Sciences, Kent State University

The fusion between TMRSS2, an androgen-regulated oncogene, and an ETS transcription factor estrogen-regulated gene, ERG accounts for up to 60% of prostate cancer (PCa) incidents. Exposure to genotoxic agents, such as ionizing radiation (IR) produces DNA damage and its toxicity is augmented when the DNA repair is impaired. Poly ADP-ribose Polymerase (PARP) inhibitors, such as rucaparib are most effective in cells deficient in DNA repair. Interestingly, VCaP cells, which harbor TMRSS2-ERG, and PC3 cells stably overexpressing it showed gH2AX and 53BP1 IR-induced foci (IRIFs) constitutively, indicative of persistent DNA damage that was absent if the gene fusion was depleted by siRNA. This response correlated with the ability of the gene fusion protein to bind to DNA-PKcs on the chromatin and, as a result, inhibited its kinase activity. DNA-PKcs deficiency caused by TMRSS2-ERG destabilized critical NHEJ components. The kinase activity was restored and the DNA damage response (constitutive or induced) diminished, as measured by gH2AX and 53BP1 IRIFs when TMRSS2-ERG was depleted by siRNA. Therefore, the presence of TMRSS2-ERG, by inhibiting NHEJ DNA repair, enhanced radiosensitization of PCa cells by rucaparib. Senescence was also an important response following IR in cells expressing TMRSS2-ERG due to inhibition of DNA-PKcs, which has been reported to contribute to decreased clonogenic survival. Following IR, PC3 cells expressing TMRSS2-ERG had also elevated Rad51 IRIFs, indicating sustained DNA damage-induced homologous recombination (HR). Thus, by inhibiting NHEJ, TMRSS2-ERG provides a synthetic lethal interaction with HR after the DNA replication block induced by PARP inhibition. Similar to TMRSS2-ERG, autophagy inhibition also blocked NHEJ. These findings provide unique mechanistic insights into NHEJ misregulation in human tumor cells, in which defects in NHEJ core components are rare.

### **Poster 68 - Perineuronal nets on GABAergic cells in the inferior colliculus that project to the medial geniculate body**

Nichole Foster

College of Arts & Sciences, Kent State University

Perineuronal nets are aggregates of extracellular matrix that can inhibit structural plasticity, promote synaptic plasticity, and protect neurons from oxidative stress (Karetko et al. 2009, *Acta Neurobiol Exp* 69:564). In many brain areas, including inferior colliculus (IC), perineuronal nets are preferentially associated with GABAergic neurons, dividing populations of GABAergic cells into netted and non-netted categories. (Foster et al. 2012, *Soc. Neurosci. Abst.* 365.10). GABAergic IC cells project to a number of extrinsic targets; we tested here whether nets are associated with GABAergic cells that project to the medial geniculate body (MG) by injecting retrograde tracers into the MG. Immunohistochemistry for glutamic acid decarboxylase (GAD) and staining with *Wisteria floribunda* agglutinin determined whether retrogradely labeled IC cells were GABAergic and/or netted. We found that 26-40% of GABAergic IC cells that project to MG are netted. Netted IC cells projecting to MG tend to project to the ventral or medial subdivisions of MG, suggesting involvement of these cells in both the lemniscal auditory pathway to primary auditory cortex and the polysensory pathway to auditory cortex and the amygdala. Supported by NIH DC04391 and DC012450.

### **Poster 69 - The role of ATF3 in arsenic-induced GADD45 $\alpha$ expression**

Qiwen Shi

College of Arts & Sciences, Kent State University

GADD45 $\alpha$  (growth arrest and DNA damage inducible gene 45 $\alpha$ ), an effector of G2/M checkpoint, is induced by trivalent arsenic (As<sup>3+</sup>) in human bronchial epithelial cell line, BEAS-2B. In the present study, we investigated the regulation of ATF3 (activating transcription factor 3) on GADD45 $\alpha$  with As<sup>3+</sup> treatment. We demonstrated that As<sup>3+</sup> induced ATF3 expression, both at the mRNA and protein level, and the induction was reduced by p38 and JNK inhibition, but not affected by PI3K and ERK inhibition. Luciferase assay also confirmed As<sup>3+</sup> involvement in ATF3 transcriptional regulation. Moreover, silencing of ATF3 downregulated As<sup>3+</sup>-induced expression of GADD45 $\alpha$  suggesting that ATF3 acted as a activator of GADD45 $\alpha$  transcription in the presence of As<sup>3+</sup>. Taken together, our data indicated that the increase of GADD45 $\alpha$  in response to As<sup>3+</sup> was mediated by ATF3.

### **Poster 70 - Role of PKC $\epsilon$ in hypoxia induced neurodegeneration**

Varun Kumar, Yi-Chinn Weng, and Wen-Hai Chou

College of Arts & Sciences, Kent State University

Role of PKC $\epsilon$  in Hypoxia Induced Neurodegeneration Varun Kumar, Yi-Chinn Weng, Wen-Hai Chou School of Biomedical Sciences and Department of Biological Sciences, Kent State University Abstract Cardiac arrest is a leading cause of death in the United States. One of the devastating effects after cardiac arrest is neurodegeneration associated with global cerebral ischemia. We have recently established a mouse model of global cerebral ischemia by inducing hypotension and bilateral common carotid artery occlusion. Neurodegeneration is observed specifically in hippocampus three days after the mouse model of global cerebral ischemia. Pharmacological agents such as PKC $\epsilon$  peptide activator are known to confer protection against cerebral ischemia. However the effect of deleting PKC $\epsilon$  on global cerebral ischemia has not been studied. We have induced the global cerebral ischemia in wild-type and PKC $\epsilon$  null mice, and used Fluoro-Jade C and cresyl violet staining to visualize degenerating and dead neurons. We found that the neurodegeneration and neuronal cell death are dramatically reduced in the hippocampus of PKC $\epsilon$  null mice. Work is in progress to determine the mechanisms of PKC $\epsilon$  mediated neurodegeneration by revealing the downstream signaling targets of PKC $\epsilon$ .

### **Poster 71 - Group II mGluRs induce LTD of GABAergic transmission without modulating glutamatergic transmission in cochlear nucleus neurons**

Rebecca Curry

College of Arts & Sciences, Kent State University

Rebecca J. Curry<sup>1, 2, \*</sup>, Zheng-Quan Tang<sup>1</sup>, Wei Shi<sup>1, 2</sup>, Emilie Hoang Dinh<sup>1</sup>, William R. Hamlet<sup>1, 2</sup>, Yu-Wei Liu<sup>1</sup>, Yong Lu<sup>1, 2</sup> <sup>1</sup>Northeast Ohio Medical University <sup>2</sup>Kent State University School of Biomedical Sciences Long-term depression (LTD), a persistent activity-dependent reduction in the efficiency of synaptic transmission, has been extensively studied at glutamatergic synapses, but is poorly understood at inhibitory synapses. In this study, whole-cell patch recordings from acute brain slice preparations show that activation of group II metabotropic glutamate receptors (mGluRs) induces LTD of GABAergic transmission in neurons of the chicken cochlear nucleus magnocellularis (NM), the first central auditory station that encodes temporal information of sounds. Interestingly, mGluR II did not modulate the excitatory glutamatergic transmission of NM neurons, indicating that a heterosynaptic LTD of GABA release is induced by mGluR II and expressed presynaptically. Immunohistochemistry and western blot confirmed the expression of group II mGluRs in the NM. Our finding of mGluR II-induced LTD of GABAergic synapses represents a novel form of long-term plasticity in the central auditory system, and provides evidence supporting our previously proposed model in which tonic activity of mGluRs regulates the GABAergic transmission in NM, enhancing temporal information processing of sounds. Supported by NIH Grant DC008984 to YL.

### **Poster 72 - Lipocalin-2 is a detrimental factor after stroke-reperfusion injury**

Guona Wang, Yi-Chinn Weng, and Xiqian Han

College of Arts & Sciences, Kent State University

The plasma concentration of lipocalin-2 (LCN2) is elevated in human patients with acute ischemic stroke and transient ischemic attack, but its role in stroke is unknown. Here we show that LCN2 proteins were induced in mouse plasma and ipsilateral hemisphere after transient middle cerebral artery occlusion (tMCAo). The level of NGAL induction reaches 7.7  $\mu\text{g/ml}$  in plasma and 324.2 ng/ml in the ischemic hemisphere at 24 h after tMCAo. The induction of LCN2 proteins in the ipsilateral hemisphere is detected in the infiltrated neutrophils and a subset of resident astrocytes. To determine the effect of induced LCN2 after stroke, we induced tMCAo in wild-type and LCN2 null mice, and found that the LCN2 null mice had reduced infarct size and improved neurological outcomes after tMCAo. These results suggest that LCN2 is a detrimental factor induced after ischemic stroke.

### **Poster 73 - Possible interactions between the oxytocin system and the neural circuitry underlying prepulse inhibition of the acoustic startle reflex**

Megan Rich

College of Arts & Sciences, Kent State University

Abnormalities in the oxytocin (Oxt) system have been linked to schizophrenia. There is altered Oxt signaling in some individuals with schizophrenia, and Oxt is effective at ameliorating some of the symptoms associated with schizophrenia. One endophenotype of schizophrenia are deficits in sensorimotor gating, specifically prepulse inhibition (PPI) of the acoustic startle reflex. Altered PPI is caused by damage to the cortico-striato-pallido-pontine (CSPP) circuit. Previous work in our lab has shown that when phencyclidine (PCP) is administered to Oxt knockout (Oxt  $-/-$ ) mice larger PPI deficits are observed, as compared to Oxt wildtype (Oxt  $+/+$ ) mice. We sought to determine if PCP would disrupt PPI in Oxt receptor knockout (Oxtr  $-/-$ ) mice and determine where Oxt may interact with the PPI neural circuitry. We treated Oxtr  $-/-$  mice with 2.5, 5.0, or 7.5 mg/kg of PCP and found that, Oxtr  $-/-$  did not have larger PPI deficits compared to Oxtr  $+/+$  mice. When we measured neuronal activation, in the CSPP of Oxt  $-/-$  mice following PPI testing, we found a global reduction in c-Fos induction in Oxt  $-/-$  compared to Oxt  $+/+$  mice. Therefore, Oxt appears to be neuroprotective against PCP disruption in PPI, but not through the Oxtr.

### **Poster 74 - Protein phosphatase PP1 $\gamma$ 2: a biochemical necessity or an accident in evolution?**

Tejasvi Dudiki, Nilam Sinha, and Vijayaraghavan Srinivasan

College of Arts & Sciences, Kent State University

PP1 $\gamma$ 1 and PP1 $\gamma$ 2 of the Serine/threonine phosphatase family are splice variants of Ppp1cc gene with PP1 $\gamma$ 1 retaining intron 7. These isoforms are identical except for 22 amino acid C-terminus tail of PP1 $\gamma$ 2 encoded by exon 8. While PP1 $\gamma$ 1 is ubiquitous in somatic cells, PP1 $\gamma$ 2 is expressed exclusively in male germ cells. Knockout of Ppp1cc results in male sterility due to impaired spermiogenesis. Since PP1 $\gamma$ 1 and PP1 $\gamma$ 2 have identical catalytic properties, we examined if PP1 $\gamma$ 1 could substitute for PP1 $\gamma$ 2 in testis. We generated four different transgenic PP1 $\gamma$ 1 rescue mice lines. The first three lines were generated using cDNA that included a substantial or entire portion of the 3'UTR of PP1 $\gamma$ 1 mRNA. Lack of fertility in these three lines was attributed to low levels of transgenic PP1 $\gamma$ 1 in testes probably due to instability of PP1 $\gamma$ 1 mRNA containing intron 7 in testis. We made a fourth PP1 $\gamma$ 1 transgenic rescue line with a cDNA construct, which mimicked PP1 $\gamma$ 2 mRNA lacking intron 7. Mice from this rescue line expressed high testis levels of transgenic PP1 $\gamma$ 1 resulting in rescue of spermatogenesis and partial fertility. Our studies raise the intriguing possibility that PP1 $\gamma$ 2 might have arisen as an evolutionary accident rather than for its unique biochemical properties.

### **Poster 75 - TRAPPC9 regulates osteoblast proliferation and differentiation through NIK - IKK pathways**

Thomas Mbimba

College of Arts & Sciences, Kent State University

TRAPPC9 is one of the largest TRAPP II complex subunits. TRAPP II is an important membrane tethering complex for coated vesicles during intra-Golgi an early endosome to late Golgi traffic. TRAPPC9 is a novel upstream regulator of NF-KappaB. NFkB pathway is part of a family of transcription factors involved in a number of different clinical pathologies. During cell differentiation, TRAPPC9 enhances NF-kB activity by binding to NIK (NF-kB Inducing Kinase) and IKK $\beta$  (IKB Kinase subunit). Recent publications have associated mutations on TRAPPC9 gene to mental retardation and postnatal microcephaly. The present study is intended to elucidate the role and function of TRAPPC9 in osteoblast proliferation, differentiation and function. Mouse embryo (e 145) and mouse femur (12 week) immunohistochemical staining identify TRAPPC9 protein expression in osteoclast, osteoblast, and chondrocytes. TRAPPC9 protein expression increased during mature stages of osteoblast differentiation of MC3T3 cells. Loss of function experiments using shRNA in MC3T3 showed increased proliferation and differentiation compare to controls. Alkaline phosphatase staining as well as Vonkasa staining showed increased matrix deposition and mineralization in the knockdown group compared to controls. Taken together, these data suggest that TRAPPC9 is major regulator of osteoblast proliferation, differentiation and possibly function



**Poster 76 - Increased expression of growth associated protein 43 after seizures in rodent model of irradiation-induced cortical dysplasia**

Ashley Nemes

College of Arts & Sciences, Kent State University

Medically intractable epilepsy patients typically have underlying pathological abnormalities in the cortex called cortical dysplasia (CD). Patients exhibiting CD have a decreased threshold to seizures. While CD pathology is the “first hit”, GAP-43 expression is up-regulated after a “second hit”, which may cause an increase in neuronal growth, eventually leading to epileptogenesis. Rats were injected with a sub-convulsive dose of pentylenetetrazole (PTZ). The brains were harvested at 2 days, 15 days and 30 days following seizure induction to observe acute and chronic effects of GAP-43. The expression of GAP-43 is higher in CD rats than NL rats without PTZ. It is up-regulated from day 2 to day 15 and day 30 after PTZ injection in the CD rats, suggesting increased growth after the second hit. Normal rats revealed an acute up-regulation of GAP-43 at day 2, which decreased at days 15 and 30. GAP-43 is up-regulated after PTZ injection, however it continues to increase in rats which have CD, while normal animals recover after 2 days. These results show that GAP-43 may play a role in the mechanisms of epileptogenesis, and that differences in pathology may result in changes in the regulation of this protein after a second hit.

**Poster 77 - Ventromedial hypothalamic melanocortin receptors and the regulation of skeletal muscle energy expenditure via thermogenesis**

Chaitanya Gavini

College of Arts & Sciences, Kent State University

The ventromedial hypothalamus (VMH) and the central melanocortin (MC) system modulate energy homeostasis, thermoregulation, food intake, body weight and high-fat diet-induced thermogenesis by sympathetic (SNS) activation of brown adipose tissue (BAT). We predicted that activation of VMH neurons will alter skeletal muscle energetics similar to brain control of BAT. Male Sprague-Dawley (SD) rats (n= 10) had temperature transponders implanted adjacent to BAT and near the gastrocnemius (gastroc) muscle of hind limbs and chronic guide cannulae aimed at the VMH. All rats received intra-VMH microinjections of vehicle and melanocortin receptor agonist (Melanotan-II; MT-II). Muscle and BAT temperatures were measured in response to MT-II and vehicle for 4 hours post-injection. Intra-VMH MT-II induced an increase in BAT temperature and a significant increase in gastroc temperature compared to vehicle microinjection ( $p < 0.05$ ) during light phase. These data support the hypothesis that the melanocortins act in the VMH to regulate skeletal muscle energy expenditure, dissipating calories as heat, analogous to brain control of BAT. We propose a functional model in which MC input to the VMH activate pre-autonomic brain regions, increasing SNS outflow to the myocytes, thereby altering skeletal muscle energetics and liberating heat without any change in their motor activity.

**Poster 78 - Mechanism of bevacizumab internalization and fate in brain endothelial cells**

Gaelle Muller-Greven

College of Arts & Sciences, Kent State University

Antiangiogenic therapy shows great promise for treatment of cancer. Bevacizumab is an FDA-approved humanized monoclonal antibody that inactivates vascular endothelial growth factor-A (VEGF-A), thereby inhibiting angiogenesis in some patients with recurrent glioblastoma tumors. The internalization and fate of bevacizumab in endothelial cells (ECs) may play a critical role in patient response to therapy. We examined the internalization of bevacizumab by normal brain ECs and found that internalization increased in a time-dependent manner (30 min - 24 hrs). Epidermal growth factor (EGF) stimulated internalization, suggesting bevacizumab enters the cells by an endocytic pathway that is induced by growth factors, such as macropinocytosis. Also, internalized bevacizumab in part co-localized with the EGF receptor. Treatment with Amiloride (inhibitor of macropinocytosis) decreased the number of bevacizumab-containing vesicles/cell suggesting internalization via macropinocytosis. Treatment with Bafilomycin A1 (lysosomal acidification inhibitor) caused accumulation of bevacizumab, suggesting one fate is lysosomal degradation. Ongoing experiments will determine the endocytic compartment(s) containing bevacizumab, its trafficking, and whether it is transcytosed across normal brain and tumor-associated ECs. Understanding the mechanism of internalization and trafficking of bevacizumab in normal brain and tumor-isolated ECs will positively impact the design and modification of monoclonal antibody therapy for glioblastoma patients and other cancers.

### **Poster 79 - The use of the endocranial base in the estimation of ancestry**

Nicole Siegel

College of Arts & Sciences, Kent State University

The goal of this presentation is to inform attendees about the merits of endocranial base landmarks in forensic analysis. Ancestry estimation is an integral part of the analysis of human remains in forensic studies. The cranium is among the most useful parts of the skeleton for estimation of sex and ancestry. The endocranium, in particular the endocranial base, is easily accessed after an autopsy cut routinely performed in forensic settings, and contains several consistent, easily identifiable anatomical landmarks. The endocranium is also very durable, being often well preserved in fragmentary and fossilized remains. Since similar developmental pressures affect both the internal and external surfaces of the cranium, it is likely that, like ectocranial landmarks, endocranial landmarks can be useful to discriminate different sex and ancestry groups. In this study the potential utility of a set of endocranial landmarks is assessed for these purposes. A MicroScribe 3DX Digitizer (Immersion Corporation) was used to digitize landmarks on 200 crania from the Hamann-Todd Human Skeletal Collection. Both interlandmark distances and Procrustes coordinates were analyzed through discriminant function analysis using *Fordisc 3* and *MorphoJ*. Sex differences were attributed to size, so they were detected in interlandmark distance measurements but not in Procrustes coordinates, which eliminate size differences, focusing solely on shape. When the sexes were pooled, shape differences between ancestral groups were found. Similar to traditional ectocranial landmarks, endocranial base landmarks showed significant differences between African-American and European-American crania, with African-Americans displaying significantly longer and narrower cranial bases. Discriminant function analysis using *Fordisc 3.1* classified ancestral groups with a cross-validated accuracy of 77.3%.

### **Poster 80 - To determine epitope mapping of HER3 breast cancer protein capable of inducing anti-HER3 antibodies.**

Prachi Namjoshi

College of Arts & Sciences, Kent State University

Human Epidermal Growth Factor Receptor-3 (HER3) is a transmembrane growth factor receptor of HER family with intracellular tyrosine kinase domain, transmembrane domain and extracellular ligand-binding domain. Overexpression of HER3 has been reported in 20-30% of invasive breast carcinomas. HER3 is responsible for development of resistance against tyrosine-kinase inhibitor drugs, cell survival, metastasis and tumorigenesis which makes it a novel target for vaccines and anti-cancer agents. A synthetic peptide library of HER3 extracellular domain consisting of 63 peptides, each peptide of 20 aminoacids with tandem repeats of 10 aminoacids was constructed. Balb/c mice were vaccinated with the peptide library and sera were collected. The sera containing antibodies were tested for peptide recognition by ELISA, recognition of synthetic extracellular domain by ELISA and recognition of native protein by techniques like Western blotting, Flow cytometry. Biological activity of the anti-HER3 antibodies will be tested by MTT assay, Flow cytometry (annexin and Propidium iodide staining) and complement dependent cytotoxicity (CDC).

### **Poster 81 - Tinnitus or hearing loss: What is gap detection actually measuring?**

Ryan Longenecker

College of Arts & Sciences, Kent State University

Gap-induced prepulse inhibition of the acoustic startle reflex (GPIAS) has become a popular technique for tinnitus assess in laboratory animals. A major question concerning this method is whether it is detecting tinnitus, hearing loss, or both conditions. Assuming that the tinnitus percept is centrally generated, we wanted to test whether it can be detected using the unexposed (intact) ear following unilateral sound exposure. CBA/CaJ mice were sound exposed unilaterally to a narrowband noise (116 dB) centered at 12.5 kHz for 1 hour under general anesthesia. Auditory brainstem responses were recorded before and after sound exposure to insure its effectiveness. Before and at different time points after sound exposure, GPIAS performance was monitored in exposed and/or unexposed ears in every mouse for a behavioral evidence of tinnitus. After sound exposure about half of exposed mice displayed consistent deficits in gap detection at particular frequencies at or bordering the exposure frequency, suggesting the presence of tinnitus. Following tinnitus confirmation with two ears unobstructed the sound exposed ear was blocked with a silicone ear plug and the test was repeated. Similar gap detection deficits were observed as in the unobstructed condition, suggesting tinnitus is being measured.

### **Poster 82 - A comparative analysis of hippocampus size and ecological factors in primates**

Melissa Edler

College of Arts & Sciences, Kent State University

Primates vary in their need to store spatial and temporal information for foraging and distinguishing food quality. The hippocampus plays a role in spatial navigation. This study investigates the effect of environmental factors on variation in hippocampal volume among primates. We hypothesized that primates with highly frugivorous diets and larger home ranges would have relatively larger hippocampal volume compared to folivorous/insectivorous primates and primates with smaller home ranges. We expected arboreal primates would have larger hippocampal volumes than terrestrial primates, resulting from an increased reliance navigating in the complex three-dimensional space of the canopy. We did not expect hippocampal volume to differ between nocturnal and diurnal primates. Using uncorrected and phylogenetic independent contrast analyses on 42 primate species, body size-adjusted hippocampal volume was significantly increased in primates with frugivorous diets and significantly decreased in primarily insectivorous primates. As predicted, hippocampal volume increased in association with home range size and activity patterns had no effect on primate hippocampus volume. Surprisingly, arboreal primates did not differ from terrestrial primates in hippocampus size. These results demonstrate that environmental factors may selectively shape an increase or decrease in hippocampal volume in primates due, in part, to its role in spatial memory.

### **Poster 83 - Preventing clostridium difficile transmission by exosporium altering treatments**

Michael Shilling

College of Arts & Sciences, Kent State University

*Clostridium difficile*'s spores have an exosporium containing protein surface receptors that adhere specifically to mammalian skin cells. Antibodies to the exosporium's surface proteins have been created that would act as surrogates to the mammalian skin cells. *C. difficile* spores have been bound to ELISA microtiter wells and reacted with specific antibodies to detect antibody binding. Once this immunoassay is developed, spore pretreatments would be evaluated to test the treatment's ability to alter the surface proteins by preventing antibody attachment. An innovated treatment to alter these surface proteins would reduce the carriage and transmission of these spores on the hands of infected patients and the healthcare providers responsible for their care.

### **Poster 84 - Wilms Tumor 1 (WT1) mediated regulation of Cyclin A1 in leukemia**

Sony Pandey

College of Arts & Sciences, Kent State University

Higher levels of WT1 are observed in bone marrow (BM) of acute leukemia patients than in normal BM. We predict that WT1 plays a leukemogenic role by upregulating the expression of growth control genes such as CyclinA1 (CCNA1) and enhancing proliferation of leukemic progenitor cells. Two potential WT1 binding sites were identified in the CCNA1 promoter and Chromatin Immunoprecipitation (ChIP) analysis confirmed WT1 binding to these sites in chromatin of K562 leukemia cells. Real time PCR (qRT-PCR) analysis of WT1(isoformA)-transfected K562 cells showed transcriptional activation of CCNA1 gene. However, upregulation was not observed following transfection with mutant WT1 lacking exons7-10. To address the clinical relevance of WT1 expression in pediatric acute leukemia, qRT-PCR was used to measure WT1 and CCNA1 transcript levels in leukemic BM, relative to non-neoplastic BM samples. Results showed higher levels of WT1 expression in Acute Myeloid Leukemia (AML) in comparison to Acute Lymphoid Leukemia (ALL). In particular, an examination of AML-M3 BM samples showed high expression of both WT1 and CCNA1, consistent with upregulation of CCNA1 by WT1. Overall these findings support the hypothesis that WT1 may up-regulate CCNA1 expression in BM progenitor cells, potentially promoting oncogenic transformation.

### **Poster 85 - What effect does release of the deep transverse intermetatarsal ligament have on the intermetatarsal 1-2 angle? A cadaveric study comparing pre-operative and post-operative weight-bearing anterior-posterior radiographs**

Nathaniel Preston

College of Podiatric Medicine, Kent State University

The accompaniment of lateral soft-tissue release during bunionectomy procedures is common practice in the surgical correction of hallux abducto valgus (HAV) deformities. During lateral soft-tissue release, resection of the deep transverse intermetatarsal ligament (DTIL) has been seen as an important and typical sequential step in order to release the deforming force of the plantar lateral contracture. Isolation of a single component of the lateral release, specifically resection of the DTIL, and its specific effect is not well documented. The purpose of this study is to isolate the release of the DTIL and measure its effect on the intermetatarsal 1-2 angle (IMA 1-2). The specific aim of the study is to compare pre-operative and post-operative weight-bearing IMA 1-2. It is hypothesized that the IMA 1-2 will increase with the isolated release of the DTIL.

### **Poster 86- Analytic solutions of the normal modes and light transmission of a cholesteric liquid crystal cell**

Mykhailo Pevnyi

College of Arts & Sciences, Kent State University

Cholesteric liquid crystals, consisting of chiral molecules, form self-assembled periodic structures exhibiting a photonic bandgap. Their selective reflectivity makes them well suited for a variety of applications; their optical response is therefore of considerable interest. The reflectance and transmittance of finite cholesteric cells is usually calculated numerically. Evanescent modes in the bandgap make the calculations challenging; existing matrix propagation methods cannot describe the reflection and transmission coefficients of thick cholesteric cells accurately. Here we present analytic solutions for the electromagnetic fields in cholesteric cells of finite thickness, and use them to calculate the transmission and reflection spectra. The use of analytic solutions allows for the accurate description of arbitrarily thick cholesteric cells, which would not be possible with only direct numerical methods.

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