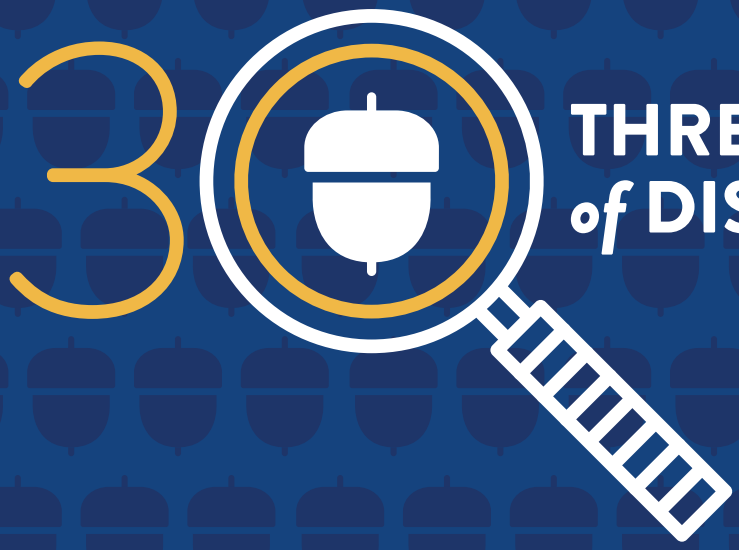
KENT STATE UNIVERSITY



THREE DECADES *of* DISCOVERY

30TH ANNUAL

GRADUATE RESEARCH SYMPOSIUM

APRIL 3, 2015 | KENT STUDENT CENTER

GSS est. 1977

Sponsored by
Graduate Student Senate

Welcome, and thank you for attending Graduate Student Senate's 30th Annual Graduate Research Symposium! Whether you're here to present your own research, to judge presentations, or to simply take in the work of Kent State's graduate students, we're glad you're here.

Anniversary years give us special occasion to pause and reflect on where we have been and where we are headed. The long history of the event shows the dedication of the Kent State's graduate student body to supporting and celebrating graduate research and scholarship. But dedication alone would not explain the rampant growth of the event over the last five years—from just 40 presentations in 2010 to over 300 in 2015. What explains this growth? I'm inclined to believe that it is due to our increasingly strong and motivated graduate student body, trained in programs becoming more competitive and renowned by the year. Let's continue to build on this momentum together.

This event truly could not be possible without our faculty and staff judges who so graciously volunteer their time and expertise, the GSS Executive Board members who have put in countless hours helping organize this event, and our many gracious volunteers. My sincere thanks to President Warren for her willingness to share words of wisdom and inspiration at our Awards Luncheon today. Thanks also to Dean Stephens whose support has facilitated the growth of this event. Finally, my utmost thanks and appreciation go to Dr. Kate McAnulty, who dedicated so much of her time to help us make this day a success—from high-level planning to logistics to unending encouragement.

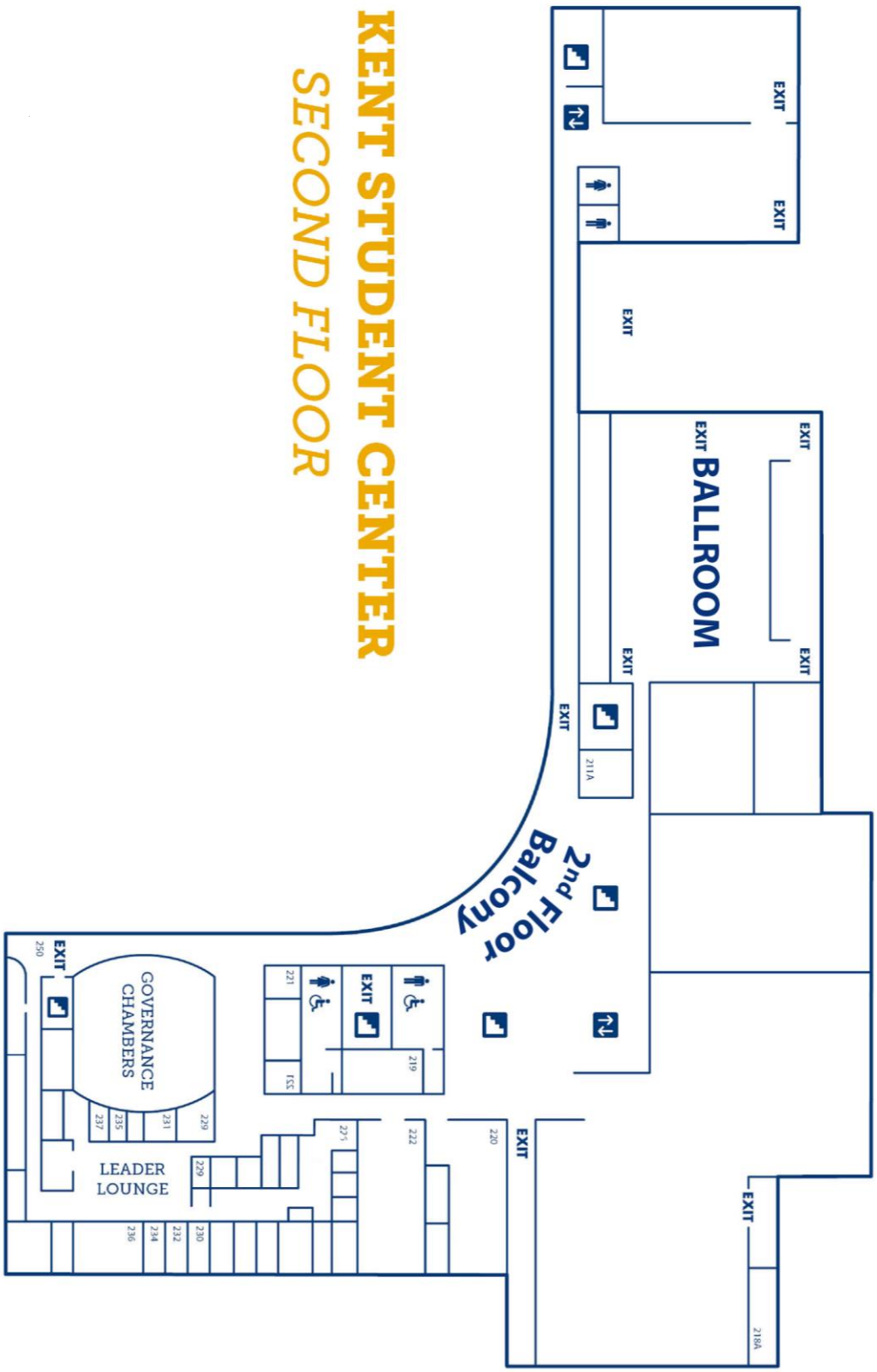
Enjoy this day of research and scholarship!

Sincerely,

Scout McCully
2014-2015 GSS Symposium Chair

Schedule/ Table of Contents

Check-in: Begins at 8:30am outside of Ballroom (2nd floor)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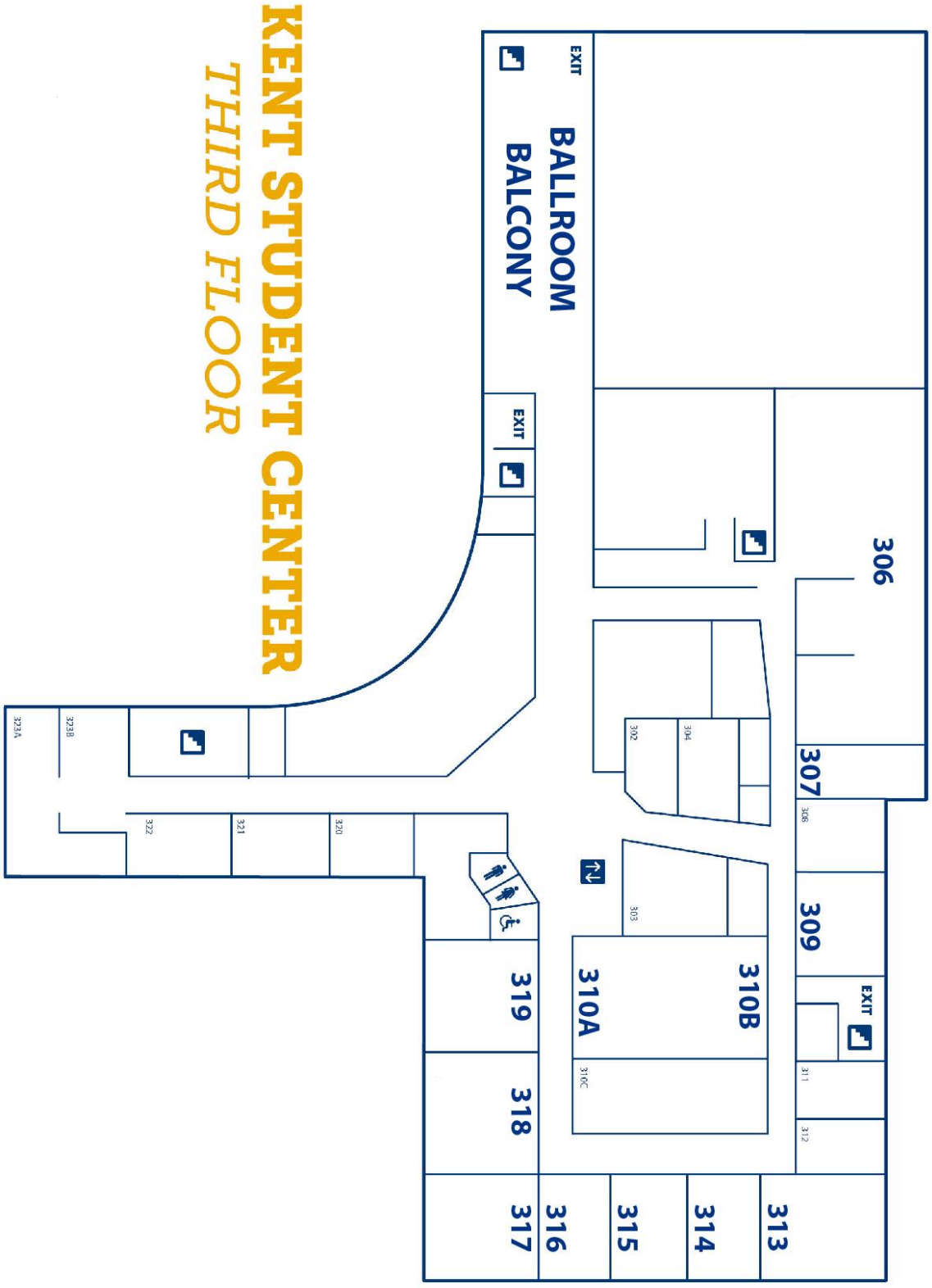
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Oral Presentations: Session 1 • 9:00 AM - 11:00 AM

Teaching, Learning, & Diversity

Ballroom Balcony

JUDGE(S): Dr. Brian Barber, Dr. Sara Raven

9:00 Murat Dagistan, Teaching, Learning, & Curriculum,

A nationwide study on how and to what extent diversity has been integrated into syllabi and university policy in American universities.

Abstract: Diversity is increasingly becoming a critical and inclusive concept in American higher education to address issues related to race, ethnicity, gender, socioeconomic status, sexual and political orientation. Stulberg and Weinberg (2011) assert that even though the majority of American universities try to form extensive definitions of diversity to reflect their institutional approach, existing collections of ideas or definitions still tend to focus on a narrow understanding of diversity in education. It seems that some universities tend to limit the scope of diversity and view it only as a commercially viable feature. For example, even though diversity is clearly stated in university policy, limited or no courses/programs related to diversity are offered in many universities. The purpose of this nationwide research is to investigate how and to what extent diversity has been integrated into syllabi and university policy in American universities. To collect data, one university is randomly chosen from each state; its website is deliberately analyzed; all diversity-related statements or links in university policy and syllabi are collected and evaluated; and finally, these evaluations are added to both regional and national data. All of the analyses are used to create a nationwide map of diversity.

9:15 Yang Gao, Teaching, Learning, & Curriculum,

How EFL teachers' beliefs about reading and teaching reading inform their actual practice? A mixed method case study.

Abstract: This study investigated the in/consistency between English as a foreign language (EFL) teachers' stated beliefs and their actual practices. Two EFL teachers teach at university in the Northeastern China were selected to participate in this case study, which is in a mixed methods design with both quantitative and qualitative designs involved. Findings of the study are: 1. While EFL teachers' stated beliefs about reading and teaching reading show their solid theoretical and pedagogical foundation, their actual practice does not fully represent their stated beliefs, due to limited class time and contextual factors. 2. A functional ideology about reading which highlights the importance of reading skills/strategies is primarily revealed in the two teachers stated beliefs and actual practice, while there also exists the teachers' acknowledgement of other language ideologies which focus on teaching content knowledge and arousing students' reading interest. The study is significant in

addressing the research gap on college reading teachers' beliefs and practices, particularly in the Chinese EFL context.

9:30 Rashmi Singh, Teaching, Learning, & Curriculum,

Solving linear equations: Approaches in traditional and reformed curriculum of mathematics in United States

Abstract: Solving linear equations is an important topic for middle school students. While learning algebraic equation solving, it is common for students to apply arithmetical understanding to solve and interpret symbolic expression. Research shows that the use of different approaches can create the potential for new concepts, entities and operations to provide meaning . This paper analyzes two curricula approaches of teaching linear equation solving in United States. These approaches provide a platform to compare between methods of traditional mathematics teaching (Glencoe Mathematics) and a standards-based mathematics curriculum (Connected Mathematics Project, CMP2). The approach and philosophy behind these two methods is discussed in terms of the linear equation solving in grade 8.

9:45 Neete Saha, Foundations, Leadership, & Administration,

International students' experiences with academic and career advising.

Abstract: "International students' experiences with academic and career advising" is worth studying because the number of international students is growing in the United States of America (USA) despite international students experiencing numerous cultural, social, academic, and psychological issues including homesickness, anxiety, depression, and loneliness (Lee & Rice, 2007; Tseng & Newton, 2002). In 2013/2014, 886,052 international students enrolled in American colleges and universities to pursue higher education (IIE, 2014). Despite the growing number of international students in the USA, research has been limited in the areas of academic and career advising and international students. Thus, with the increasing number of international students coming to study in the USA, it is imperative for American colleges and universities to be cognizant of their issues and needs.

10:00 Tanesha Walker, Lifespan Development & Educational Sciences,

The inclusion of counselor education in teacher education research.

Abstract: As colleges of education seek to embrace change in an era of standardized assessments and measures of accountability, it is important that teacher colleges also embrace components of change occurring within its very structure. Colleges of education make up a large percentage of campuses around the country and its representation goes beyond just curriculum and instruction. Counselor education and more clinically based programs are often included within the college of education and make up a large percentage of majors declared by students. Ninety percent of

CACREP accredited doctoral counselor education programs are within colleges or schools of education (CACREP, 2014). With its known representation in colleges of education, it is surprising that its representation in education annual meetings and journals does not reflect its relevancy. In addressing the lack of representation of counselor education in teacher education research, it may lead to initiating change in policy and practice. The focus for this research is to bring awareness to this issue. As a result of this presentation, individuals can expect to gain a new insight in this area through open discussion and reflection.

10:15 Nancy Weissman, Lifespan Development & Educational Sciences,

Social, cognitive and teaching presence in the synchronous online environment.

Abstract: This presentation will focus on research that is being conducted using synchronous technology to provide virtual instruction to students in online classes. The research in process is grounded in the Community of Inquiry (CoI) framework which suggests that learning online is supported by the three presences – cognitive, social and teaching presence. Application of synchronous technology to the online classroom seeks to improve student learning by establishing CoI. In this presentation the CoI model and each presence will be discussed followed by a description of the virtual instruction provided, the survey data collected. Based on survey data collected from students measuring student's perceptions of the presences and coded chat transcripts, the presenter will discuss how instructors can supplement online instruction with synchronous sessions to encourage student engagement and learning. Session attendees will be able to define each presence in order to consider alternative methods to engage distance learners and promote teaching and learning as a community oriented process; recognize effective strategies in an effort to engage learners in a synchronous environment; and support the need and usefulness of using such technologies in the online environment to promote student success.

Across the Nation

Room 307

JUDGE(S): Dr. Chris Post, Dr. Xinyue Ye

9:00 Carl Jacklitch, Geology,

A geotechnical investigation of the 2013 fatal rockfall in Rockville, Utah.

Abstract: In December 2013, a rockfall occurred in Rockville, Utah, where an estimated 2700 tons of material released from a slope, fell through a house, and resulted in two fatalities. The main objective of the study was to assess the hazard potential of the slope throughout the city, and identify the sections that were most susceptible to rockfalls, as well as other modes of slope failures. This has been done through detailed field and laboratory investigations of four sites along the slope, which

extends through the town of Rockville. The assessment of the hazard potential was conducted through the analysis of the various geologic units present. The assessment included detailed mapping of discontinuities within the resistant rock units, identification of the potential pathways that future rockfall debris may follow, and investigations of the weathering potential for the less resistant rock units. The results of the analysis were then compared to the existing rockfall hazard map. Suggestions for potential remedial measures to stabilize the slope and reduce the level of hazard have been offered.

9:15 Thomas Ballinger, Geography,

Does Arctic sea ice influence North American climate?

Abstract: Recent cryospheric research has suggested that the decline of Arctic sea ice is broadly impacting temperature and precipitation patterns in the Northern Hemisphere. However, the spatiotemporal effects of the observed ice losses on North American climate, in particular, are not well understood. This study employs a synoptic climatological weather typing scheme known as the Spatial Synoptic Classification (SSC) to holistically evaluate temperature and moisture conditions across North American Arctic lands coincident with western Arctic sea ice freeze-up dates from 1979-2013. The monthly variability of autumn/winter-dominant SSC weather types, Moist Polar (MP) and Dry Polar (DP), is evaluated and statistically linked to the sea ice freeze dates. Results suggest that the MP weather types are increasing, at the expense of DP types, across much of the domain. These frequency changes are positively correlated with the observed persistence of the western Arctic freeze-up, especially across portions of Alaska and the Yukon Territory. Comparisons of late versus early-freeze years reveal that MP frequencies occur much more often during late-freeze years, particularly over the highest latitudes in the domain. Further research is needed to explore the spatial extent of regional sea ice impacts on climatic conditions throughout the Northern Hemisphere middle latitudes.

9:30 Johnathan Kirk, Geography,

Multi-scale climatic factors of the ongoing drought in the southwestern United States.

Abstract: The southwestern United States is in the midst of a drought which has persisted since the beginning of the 21st century. While historical analyses indicate that droughts of this magnitude have occurred in the past, the rapid, recent development of the current physical and social landscapes of the region cause the southwest to be particularly vulnerable to the ongoing situation. Increasing water demands have placed strains on a dwindling supply, which has forced difficult and controversial decision making. This research studies some of the key weather and climate variables that have exhibited critical changes over the last fifteen years and contextualizes them to the drought with respect to salient proxies for water supply,

such as reservoir status and river streamflow. A climatology of atmospheric circulation patterns was constructed and the frequency of precipitation-inducing or suppressing patterns were related to yearly changes in reservoir inflow and storage at Lakes Powell and Mead, the primary storage basins in the southwest. Understanding the climatic inducers of the drought requires a multi-scale approach, so the relative water supply is examined on a sub-basin scale across the southwest as well as on a hemispheric scale, with considerations to the influence of atmospheric rivers and atmospheric-oceanic interactions as roles in propagating drought conditions.

9:45 Gordon Cromley, Geography,

'Yearning to Breathe Free': Liberty Island and the demilitarization of memorialization.

Abstract: The Statue of Liberty represents one of the most enduring American Icons. Approximately four million people visit this landmark each year. Like many urban and national landmarks, the Statue of Liberty site has undergone a remarkable transformation over its lifetime. Symbolically representing the relationship that the United States has with France, the landscape of Liberty Island contains more symbolism than just the enormous statue that provides the focal point for the landscape. The star- shaped base supporting the pediment of the statue follows the outline of a pre-existing military fort that was active into the 1950s. The larger installation known as Fort Wood represented a link in the defensive network around New York harbor during the phase of American seacoast fortification known as 'System Two'. The decommissioning of this site was a slow process that occurred over almost two centuries. This paper examines how the relationship between constructing the national monument coincided with the demilitarization of the island and how that relationship influenced the commemorative landscape that visitors now experience. It also examines the land use change over time and to understand more thoroughly the connection between land use and the accretion of the memorialized landscape.

10:00 William Kiskowski, Geography,

The cultural geography of metropolitan Detroit, Focusing on the Arab American community in Dearborn.

Abstract: This paper describes the settlement of Arab Americans in the Detroit Metropolitan area and the development of an ethnic community in that setting.

Around the World

Room 309

JUDGE(S): Dr. Reid Coffman, Dr. Tom Schmidlin, Ms. Shazia Nasir

9:00 Denise Jenison, History,

Making the desert bloom: Modernization as a reference culture in the debate over Palestine.

Abstract: Since John Winthrop's famous City upon a Hill speech, Americans have seen themselves as an example for the rest of the world to follow. This idea of American exceptionalism formed a key component of how Americans understood their global role: a country with a mission to reshape the world in its image. By the twentieth century, American ideas about modernization served as a standard by which other cultures were measured. Modernization included more than just technical and scientific achievements, but also meant cultures that were forward-looking, innovative, individualistic, and that had shed the superstitions of their "backward" beliefs. This paper explores how Arab Americans, via the Institute of Arab American Affairs, used U.S. modernization as a reference culture in their efforts to sway American opinion over the issue of Palestine in the 1940s. Arabs had long been perceived as too traditional, without much hope of modernization; meanwhile, as the Zionist effort gained momentum, numerous observers lauded their ability to make the desert bloom. Throughout its numerous publications, the Institute strove to challenge that perception, arguing that the Arab population best reflected American ideals and was rapidly modernizing along American lines.

9:15 Turki Alosimi, Architecture,

The urban design of religious tourism: Case study of pilgrimage in Makkah Saudi Arabia.

Abstract: In the 21 century era of global tourism with its seasonal peak seasons, considerations for offseason activities has become a crucial challenge for maintaining economic vibrancy in many parts of the world. The built infrastructure required for peak season events many times demands creative programming for otherwise off season events. The last 20 years have redefined tourism as something more than leisure activities and adventuring. Today tourism includes such growing categories as eco-tourism, sport tourism, music tourism, art tourism, and religious tourism. In this study, religious tourism will be explored as a complimentary set of season activities to the world's greatest religious pilgrimage. The study will include a set of case studies of other initiatives to develop off season activities in places with peak season activities. Makkah, a Saudi Arabian city, is a holy place for the entire Muslims in all over the world. Millions of pilgrims visit Makkah every year, and the city has expanded is infrastructure accordingly by creating districts and amenities to absorb an enormous number of pilgrims. The pilgrimage has two seasons; Ummra, and Hajj. Finding

programmatic possibilities generating offseason activities is to be explored in this study.

9:30 Anuj Gurung, Political Science,

Diaspora and globalized civil war: A statistical analysis.

Abstract: In political science, we generally study civil wars through economic and political drivers (Collier and Hoeffler 2004; Fearon and Laitin 2003). Economic impact of diaspora - mostly through remittances - is one such predictor of civil conflict. I hypothesize that impact of diaspora is an indirect one. Remittances affect families, which can affect state institutions. Therefore, diaspora-civil war link is better understood through relative institutional capacity and economic position of the states. Based on this statistical analysis, domestic characteristics as well as international perceptions of the state are important in understanding civil wars.

9:45 Yeo Jung Yoon, Political Science,

Collective Security Treaty Organization (CSTO) in the Post Soviet space.

Abstract: Since the collapse of the Soviet Union, Russia has lost much of its influence in the post Soviet space with NATO's eastward expansion and the expanding hegemony of the US. In order to promote Russia's interests in the post Soviet space, scholars and the Russian government itself have emphasized Russia-led multilateralism and multilateral regional structures, broader bilateral cooperation, and development of contacts with prominent opposition leaders in the region. Collective Security Treaty Organization (CSTO) is the main instrument to ensure regional stability and security in the post Soviet space in the form of multilateral structure; and Russia is the main proponent and chief financier of the organization. The main purpose of this organization is the securing of traditional military cooperation: development of common counter-terrorism forces, military training exercises, military facility transactions and defense policy coordination. In this paper, I will focus on the costs and benefits of the CSTO for Russia and member states in the post Soviet space.

10:00 Shakhnoza Yakubova, Foundations, Leadership, & Administration,

Transition from secondary to higher education: A case study of ethnic Uzbeks in rural southern Kazakhstan.

Abstract: Kazakhstan is a multi-ethnic and multi-lingual environment. As of 2009, the population of Kazakhstan includes 125 ethnic groups, among which ethnic Uzbeks are the third largest group (2.9%) after Kazakhs (63.1 %), and Russians (23.7%). The language of instruction is in Kazakh and Russian in public sectors of primary, secondary and higher education. However, the ethnic minorities such as Uzbeks, Uyghurs and Tajiks are able to pursue their education at elementary and secondary levels in their native languages, but not at higher education level. The graduates of

ethnic minority high schools, especially from rural areas, face challenges in making successful transitions from secondary to higher education due to the language barrier; the United National Test for the admission to higher education institutions (offered once a year) is conducted Kazakh and Russian. Thus, potential students whose native language and/or language of instruction in elementary and secondary school was another language often are unable to study at the university level. However, the researcher has developed academic support center, a platform, to increase the higher education access to the rural ethnic minorities in southern Kazakhstan; it allowed many ethnic minorities to succeed not only in Kazakhstan but internationally as well.

10:15 Abdulelah Alqarni, Foundations, Leadership, & Administration,

The relationship between student evaluations and teacher quality in high school in Saudi Arabia: Item Response Theory (IRT) analysis and multilevel modeling.

Abstract: This study examines the multilevel factors (i.e., student's achievement, Arabic teacher quality measure [ATQM] scores, and rural and urban school) that influence student ratings of teachers (SRT) in Saudi Arabia among third grade high school students (i.e., equivalent to 12th graders in the United States). Rasch Analysis, Hierarchical Linear Modeling, and Analysis of Covariance were used to achieve three main objectives: (a) adapting and developing an ATQM, (b) developing a measure of SRT, and (c) examining the relationship between student-, teacher-, and school-level factors on student ratings of teacher on the SRT scale. Specific to the first objective, a psychometrically sound measure of teacher quality was developed. The final analysis of the ATQM produced a 24-question measure focusing on four domains: (a) Teacher Planning and Preparation, (b) Classroom Environment, (c) Teacher Instruction, and (d) Teacher Professionalism. Specific to the second objective, a 25-question psychometrically sound measure of student ratings of teacher was developed. The findings of the third objective indicated that a significant relationship between teacher quality scores and student ratings of teacher scores, with higher teacher quality scores related to lower student ratings of teacher scores. Additionally significant differences were found between urban schools and rural schools on student ratings of teacher scores, with rural schools having higher SRT scores.

Environment

Room 310A

JUDGE(S): Dr. Yanhai Du, Ms. Cindy Kristof, Dr. William Willoughby

9:00 Said Abiakl, Architecture,

Urban density and overpopulation in Cairo: Environmental and social problems.

Abstract: Urbanization is a big issue in the world scale today, and it is occurring everywhere in different cultures, economies, and sizes of the cities. Overpopulation in

the cities has caused many problems considering enormous need of water, food and infrastructure, and tremendous pollution amounts to the air, soil and water. The problems are more evident in developing countries, which have made the situation even more difficult due to absence of finance and proper policies. The promise of jobs and prosperity, among other factors, pulls people to cities. Half of the global population already lives in cities, and by 2050 two-thirds of the world's people are expected to live in urban areas. But in cities two of the most pressing problems facing the world today also come together: poverty and environmental degradation. This paper describes why there has been a rapid growth of informal settlements in Cairo, and why most new informal settlements develop on scarce agricultural land. Poor air and water quality, insufficient water availability, waste-disposal problems, species extinction, overcrowding, conflicts and wars, and high energy consumption are exacerbated by the increasing population density and demands of urban environments. Strong city planning, urban design and architectural studies will be essential in managing these and other difficulties as the world's urban areas swell.

9:15 Chris Willer, Geography,

Intersections of community gardens and economic revitalization in postindustrial cities.

Abstract: Most academic literature on community gardens (CG) focuses on health, social, and ecological benefits that this urban, agricultural practice can create. Having access to healthy food, empowering communities, and incorporating “nature” into the urban landscape are quite relevant and important. However, most literature lacks specific economic analysis of CG. Formerly industrialized cities of the Great Lakes like Detroit, Milwaukee, Cleveland and Buffalo have been battling an image of industrialized decline and abandonment. In an attempt to transform the city's image and to blur the lines between the city and the "natural" environment, individuals in these Rust Belt cities have introduced a variety of urban agricultural forms like CG. CG have been found to be influential on surrounding property values, in increasing amenities, employment and educational opportunity, business incubation, as well as contributors to ecological gentrification. Framing CG as a means of economic revitalization, in conjuncture with social and ecological improvement needs to be addressed if Rust Belt cities seek to stitch and mend the wounds of deindustrialization.

9:30 Sravan K. Karpurapu, Computer Sciences,

Campus Environment Maintenance (CEM).

Abstract: This is one of research mobile application which can me access by students to report any kind of problems are issues, The beauty of this project is it will work based on GPS with in the campus

9:45 Andrea Meluch, Journalism & Mass Communication,

"There's no real support system": Institutional support failures in a slowly-evolving environmental disaster.

Abstract: The incidence of slowly-evolving environmental disasters is rising. This class of disasters is characterized by human culpability, lengthy and indeterminate duration, and heightened risk for disease and mental health issues. Although research has addressed social support and its failures in the context of slowly-evolving environmental disasters, little research has addressed institutional support. This study explores the nature and sources of institutional support failures in Libby, MT, a community experiencing a slowly-evolving environmental disaster due to widespread amphibole asbestos exposure. A comprehensive institutional support coding system was applied to focus group and in-depth interview transcripts. Results reveal institutional support failures are highly salient. Business, government, health care, and media institutions were cited as prevalent sources of institutional support failures. Types of institutional support failures were marked by failure to act and provide support in accordance with institutional standards, resulting in distrust, perceptions of incompetence, and failure of institutions to take responsibility.

10:00 Stian Rice, Geography,

Putting the natural (disaster) back in famine: Malawi, 2001-2002.

Abstract: Over the last several decades, famine studies have increasingly embraced political explanations of causation: once understood to be natural disasters, famines today are largely seen as the violent consequences of policy failure, market failure, and response failure. The re-politicization of famine has helped advance an understanding of the relationship between political economy and starvation, identified winners and losers, and established calls for accountability. This "critical" shift, though positive, has come at a cost: nature has gone missing, scales of analysis have shrunk, and temporal horizons have shortened. Through an exploration of the Malawi famine of 2001-2002, this study argues for a re-engagement with nature and scale in the famine literature. The Malawi famine emerged from a complex interaction of socionatural agents and processes across spatial and temporal scales, including trade regimes that govern the movement of genetically modified organisms (GMOs), material practices of seed saving, and the politics of the body. In light of declining natural resources and increasingly volatile climate conditions, this study argues that critical approaches to famine must not discard the natural for the political, but take better accounting of nature's and capital's co-production.

Health and Biomedical Sciences

Room 310B

JUDGE(S): Dr. Lisa Chinn, Dr. Derek Kingsley, Dr. Laurie Wagner

9:00 Keith Burns, Health Sciences,

The use of passive limb movement to increase femoral artery blood flow in the lower limbs of paraplegics.

Abstract: Background: After incurring a spinal cord injury the chronic state of disuse and physical inactivity results in reduced blood flow and reduced muscle mass in the paralyzed limbs. A therapeutic modality that could increase blood flow in this population could be extremely beneficial. Methods: In a seated upright position, eight paraplegics (T6-T12) underwent five 1-minute bouts of passive leg movement at a rate of 1 Hz. A one minute recovery period was provided between bouts. Femoral artery blood flow measurements were obtained with the use of a Doppler-Ultrasound. Skin blood flow was measured with the use of Skin-laser Doppler. Results: The passive movement elicited a significant increase in blood flow during each bout from baseline measurements ($p<0.05$). Femoral artery blood flow increased 68%, 38%, 48%, 43% and 38% with each bout, respectively. In addition, skin blood flow significantly increased during each bout of passive movement with increases of 268%, 287%, 335%, 381% and 474% observed, respectively ($p<0.05$). Conclusion: The use of passive leg movement in the paraplegic population could be beneficial in increasing blood flow and reducing atrophy to the paralyzed limbs. In addition, the modality may be beneficial in reducing pressure ulcers in this population.

9:15 Yu Lun Tai, Health Sciences,

The effects of acute free-weight resistance exercise on autonomic modulation

Abstract: Problem: Researchers have evaluated autonomic modulation in response to resistance exercise machines, but not in response to whole-body resistance exercise using free-weights. Methods: Thirteen young, healthy individuals (aged 23±3 yrs) with 9±3 yrs of lifting experience volunteered for the study. Autonomic modulation was measured at rest and 25 minutes after an acute bout of resistance exercise utilizing 3 sets of 10 repetitions at 75% 1 repetition maximum on the squat, bench press and deadlift with 2 minutes of rest between sets and exercises. Each participant also completed a quiet control session of the same duration. Results: There was a significant interaction for vagal modulation such that it significantly decreased (rest: 63.8±14.4%; recovery: 23.7±18.9%, $p<0.05$) compared to rest and to the control. Sympathetic modulation significantly increased (rest: 34.6±13.9%; recovery: 74.9±20.2%, $p<0.05$) increased above rest and compared to the control. In addition, there was a significant interaction for sympathovagal dominance (rest: 0.56±0.30; recovery: 5.98±4.51, $p<0.05$) such that it was elevated above the control and rest during recovery. Conclusions: These data suggest that an acute bout of resistance

exercise using free-weights attenuates vagal recovery up to 30 minutes after completion of an acute bout of resistance exercise.

9:30 Jessica Sanata, Nursing,

Acceptability, benefits, burdens and feasibility of a guided imagery intervention for persons undergoing a total knee replacement.

Abstract: Background: Guided imagery (GI), a widely used complementary therapy, has been recommended as a mind-body therapy for pain relief following orthopaedic surgery. However, little is known about the acceptability, benefits, burdens and feasibility of the intervention. Purpose: Describe the perceptions of patients undergoing total knee replacement surgery (TKR) regarding the acceptability, benefits, burdens and feasibility of a customized GI intervention to promote TKR outcomes. Methods: Qualitative data were collected via diaries recorded by participants during the intervention phase of the study, and interviews of participants who dropped out of the study or had poor intervention compliance. Data were analyzed by content analysis for patient perceptions of acceptability, benefits, burdens, and feasibility of the GI intervention. Results: Most participants were satisfied with and actively engaged in the intervention, and they expressed perceived benefits. For the smaller group who did not find the intervention to be acceptable or feasible, reasons for dissatisfaction and barriers to engagement were identified. Conclusions: Results suggest that GI may be a beneficial intervention for persons undergoing TKR, but the intervention and its components are not universally appealing. The results of this study can provide information to further develop a targeted and customized GI intervention for this population.

9:45 Aidan Ruth, Biomedical Sciences,

Bundle number and bipedality: Probing the comparative anatomy of the anterior cruciate ligament.

Abstract: Failure of the anterior cruciate ligament (ACL) is the most common knee injury in humans. This research is an attempt to establish fundamental parameters of structure in the human ACL compared to those of other primates and mammals. To address this aim we examined the gross anatomy and histology of the knee in primates (11 species) in order to quantify the number and anatomy of ACL bundles as well as their tibial insertions using computer-assisted stereology. The ACL bundle number visible during gross anatomical dissection is conserved in primates, including humans (2 bundles). Tibial insertion fibrocartilage thickness appears to be absolutely conserved across all taxa when tested with one-way ANOVA ($F=1.580$, $P=.179$). Ratios of ligament midsubstance circumference to its tibial insertion area scaled almost perfectly with body size across all taxa examined ($r= .990$, $p<.001$). This study is the first to examine ACL bundle number in non-human primates and other

mammals, and the first comparative examination of ACL insertion microanatomy. These data suggest that evolution of the ACL, in terms of bundle number and fibrocartilage thickness, has been extremely conserved in primates, and that adaptations for locomotion lie in other aspects of the ACL and knee.

10:00 Brandon Pollock, Health Sciences,

Comparing cardiovascular responses between upper body negative pressure and lower body negative pressure.

Abstract: Introduction: Lower body negative pressure (LBNP) stimulation distal to the iliac crest pulls blood to the legs resulting in a drop in blood pressure. The aim of this investigation was to compare the cardiovascular responses to negative pressure when applied to the upper and lower limb. Methods: Ten healthy participants performed a series of protocols to compare the cardiovascular responses to upper body negative pressure (UBNP) and LBNP. Participants placed their whole left arm (WA), whole left leg (WL) or a portion of the left leg that is volume-matched to the arm (VML) into a negative pressure chamber. Participants remained at rest for 5 minutes to collect baseline data and then each limb was subject to 2 stages of negative pressure (-30 and -60 mmHg) lasting 5 minutes each., followed by a 3 minute recovery each. Brachial artery blood flow (BBF) in the non-NP exposed arm, heart rate (HR) and mean arterial pressure (MAP) responses were measured continuously. Results: A 3x3 repeated measures ANOVA (limb x pressure) revealed no interaction between WA, WL, and VML BBF and HR. However, there was an interaction observed between WA, WL, and VML MAP. Conclusions: Based on these data, it is possible that the cardiovascular responses between UBNP and LBNP are independent of one another.

10:15 David Cunningham, Biomedical Sciences,

Neurophysiologic response to bilateral vs. unilateral therapy for chronic stroke patients with varying degrees of motor impairment.

Abstract: For patients with chronic stroke, it is believed excitation of the motor cortex of the non-lesioned hemisphere (NLH) exacerbates motor deficits by exaggerating transcallosal inhibition (TCI) upon the lesioned hemisphere (LH). However, recent evidence suggests the NLH may play a compensatory role in recovery for patients with greater motor impairment. If true, then therapies recruiting the NLH would elicit a more adaptive role of the NLH. Therefore, we tested the hypothesis that therapy involving the NLH (bilateral) would lower TCI exerted upon the LH compared to therapy only involving the LH (unilateral); an effect that would become more pronounced with increasing impairment. In a crossover design, six patients with varying degrees of motor impairment underwent a session each of unilateral and bilateral therapy. We measured excitation of the NLH and TCI it exerts upon the LH using non-invasive brain stimulation. Overall, bilateral therapy resulted in a greater

reduction of TCI, where the effect was more pronounced in the more impaired patients. However, greater reduction in TCI was associated with less of an increase in excitability of the NLH. Our preliminary results suggest that bilateral therapy may invoke an adaptive rather than inhibitory influence of the NLH with greater motor impairment.

Artistic Expression & Innovation

Room 313

JUDGE(S): Dr. Yuko Kurahashi, Ms. Megan Pitcher, Ms. Cynthia Stillings

9:00 Samuel Boateng, Music,

The dimensions of social and artistic expressions in Ghana's Kpanlogo Dance.

Abstract: Ghana, located on the coastal belt of West Africa, is known for many music and dance traditions. One of such traditions is the kpanlogo dance and music form. This recreational dance was developed in the Greater-Accra Region of Ghana during the wake of its independence in the 1950s. As a multi-layered form, this neo-traditional dance combines elements from Chubby Checker's "Twist," Elvis Presley dance movements, and different Ghanaian dance traditions. After its development and acceptance as a national style, it has since moved from community centers, public squares and national platforms to both Ghanaian and international academic circles. My presentation seeks to discuss the multi-dimensional nature of kpnalogo as expressed in some of its performance practices. Thus, through demonstration:

• I will speak to the multi-faceted nature of its song texts…
• The communicative essence than thrives between its musicians and dancers…
• Discuss the instrumental organization of the form.

9:15 Rachel Hellgren, Visual Communication Design,

Improving innovation in museums with design thinking.

Abstract: In the world of museums, recent changes in philanthropic patterns are intensifying the never-ending challenges of funding and budget cuts. Moreover, museums are often internally divided and dependent on traditional management styles which perpetuate static innovation—change is deemed threatening, creativity is stifled, the workplace culture is flattened, and collaboration is riddled with conflict. A change is needed and the answer is design. When an organization is designful it gives way to an innovative spirit that involves sustaining agility, prioritizing creative thinking, sharing ideas, establishing quality relationships, and taking risks. These qualities are invaluable to generating interest, creating newness, and sustaining an audience. By integrating design as a process and a mindset, museums can finally leverage themselves as leaders of change, instead of mere reactors to crisis.

9:30 Joe Karlovec, Art,

Evolving landscapes at footprints farm.

Abstract: I studied landscape architecture for a year before returning to art school. During that time I realized I was more interested in reading and writing about landscape and urbanism than sitting in front of a computer making AutoCAD files or construction documents. When I decided to come to Kent, one of my biggest challenges was to find ways in which to bring those experiences along with me, to incorporate them into my current studies. As a way of combining my interest in landscape with my interest in art, I used the research award to volunteer at Footprints Farm in Pennsylvania. I not only gained a better understanding of organic farming practices while living off the land, but I also gained a sharper perspective of its relevancy to me personally, and even to us culturally. The residency was integral to my personal growth and development as an artist, and will prove to be a great starting point for me as I apply for numerous artist-in-residency programs in national parks that can be found all over the country.

9:45 Rachel Smith, Art,

Schmuck Jewelry Fair.

Abstract: As an award recipient of the GSS international travel award, I plan to share my experiences in Munich and how visiting the worlds largest Jewelry/Metals expo in the world directly informed my own artwork. Additionally I will share information regarding my thesis work, which I will just have presented the week of the symposium, as my trip to Germany will have played a strong roll in the way I view and understand my artwork.

10:00 Kimberly Minarich, Music,

Awakening Possibility in Students through the Power of Music

Abstract: An education in music is fundamental to a student's success in their educational career. After teaching in a school that has not had music classes of any kind in over twenty years, Minarich shares her experience of how music has positively benefited Fairmont School and her plans for the future of the music program in continuing an adventure in music with her students. Minarich gives a status of the music program; gives an explanation of the music curriculum used in the beginning year of music; explains her grading system that proved successful; shares the results of a strong music program that was evident in Fairmont School; and then communicates her goals for the future of the music program at Fairmont School.

10:15 Sophia Adodo, Art,

Critical Race Theory-The Fashion Runway through a Critical Race lens.

Abstract: Fashion runway shows have been dissected year after year and the hottest trends are published online and in various fashion related publications. Race and Fashion intersect to create a certain look or an atmosphere on the runway under the direction of the designer. Many designers use models of different ethnicities for one reason or another and shifting the focus from fashion to race is what this presentation intends to do. Utilizing Critical Race Theory, this presentation takes a look at the fashion runway and introduces a tool that can be used within the industry to display what races make up the runway predominantly season after season.

Language & Communication

Room 314

JUDGE(S): Dr. Julia Huyck, Dr. Stephanie Libbon, Dr. Jennifer Roche

9:00 Kathryn Hannum, Geography,

Geographies of language subordination in Galicia, Spain.

Abstract: Language has been demonstrated to be a key factor in national identity. Minority language communities around the world sense an impending crisis of identity the face of social competition, political indifference, and global homogenization. This paper seeks to investigate patters of disparity between official Galician linguistic laws and actual language usage in both urban and rural settings. The success of linguistic normalization hinges upon several important legislative acts passed after the Spanish constitutional referendum and democratic shift in 1978. All administration within the region has changed from Castilian to Galician, and roughly half of all compulsory education is taught in Galician. The implementation of these linguistic normalizations has had mixed results among the general public, as the reputation of the Galician language as a poor, rural tongue persists. This paper analyzes legislation regarding Galician normalization since 1978 alongside spoken language trends over the same period. It then compares urban and rural venues, and incorporates first hand experiences of Galicians into the analysis. Analyzing the effects of standardization of Galician within Galicia will help to better understand the nationalization movement within the region, of which language is a key component.

9:15 Md Rony, Journalism & Mass Communication,

A scale to measure foreign language anxiety: Its latent factor structure and construct validity.

Abstract: Numerous studies have been conducted on the fact that anxiety intervenes as an affective filter for learners in the process of second language acquisition. Even though the construct “language anxiety” was measured by different scales, the Foreign

Language Classroom Anxiety Scale (FLCAS) is the most widely used scale around the world which focuses foreign language anxiety in only classroom situations. With the aim of exploring the latent factor structure of the scale and its construct validity, we developed a 14-item measurement scale focusing on both classroom settings and general state. A total of 360 ninth and tenth graders from rural and urban schools participated in this survey, and one half of the total responses was utilized for exploratory factor analysis (EFA), and the other half was for confirmatory factor analysis (CFA). A hypothesized two factor model, same as the emerged factor structure in EFA, was tested in CFA to verify its construct validity. Results from both analyses yielded a two factor solution- Anxiety and Diffidence with good model fit indices. Also, similar findings from EFA and CFA indicate a sound construct validity. This scale can be used for measuring learners' general foreign language diffidence and its association with their anxiety.

9:30 Michael Sweet, Journalism & Mass Communication,

The work of translation and art of Ovid's Metamorphoses.

Abstract: Modern translators take for granted that no translation can be a mere reproduction of a source text in a target language. One piece of evidence for this viewpoint is found in the regular need for revisions of older translations to keep up with contemporary language, culture and usage with respect to such classic texts as the Christian and Hebrew bible. Thus, translators are attentive to different aspects of source texts as they try to convey the text's meaning in the target language. In particular, they focus on sense, stylistics, and context of the text as well as the interplay between these elements. They also consider all of these elements in relationship to the context and purposes of readers of their translations. In order, therefore, to provide for a general audience an understanding for how all these elements (stylistics, sense, textual context, reader context, reader purposes) play out in the production of a translation I will examine three translations of lines 1.125-131 of Ovid's Metamorphoses , an important source for our knowledge of Greek and Roman mythology, and compare them with the source text, one another, and examples of 'so-called' literal translation that I will furnish myself.

9:45 Kara Kirby, Journalism & Mass Communication,

Access and use of ICTs by Tanzania women: Imagining a world beyond socio-cultural expectations.

Abstract: This research study investigates how digital technology (sometimes referred to as information communication technology or ICT) can be used as a tool for empowerment in the lives of Tanzanian women emancipating them from deep-rooted, long-standing socio-cultural traditions that hinder their personal and professional development. In this basic qualitative study I attempt to draw together the context of

which girls are growing into women in Africa, the state of their current educational experiences and how digital technology can contribute to awakening their imaginations through looking out and experiencing the world and bringing their knowledge and information back to the context of their own lives. Through this localization process women can move from being consumers of information and knowledge to becoming producers and having a voice in the global discourse on women and development. This is study conducted over 6 months of Skype interviews with women in Tanzania.

10:00 Margaret Cogar, Journalism & Mass Communication,

The impact of forum status on content in student media: A mixed-methods analysis of Ohio high school publications.

Abstract: This study examines student media publications entered into the Ohio Scholastic Media Association state contest for the 2013-2014 school year. Using a mixed methods approach, it looks at the overall contest rating in relation to the publication's forum status and publication policy and examines whether forum status, and thus administrative censorship practices, impact the overall quality of the publication content.

Perspectives on Violence & Tragedy

Room 315

JUDGE(S): Dr. Doug Delahanty, Mr. Adam Steele

9:00 Savina Sirik, Geography,

Everyday experiences of Cambodian Genocide survivors in hidden landscapes of violence.

Abstract: The violence that took place during the Democratic Kampuchea (DK) regime from 1975 to 1979 was pervasive and has left a widespread legacy throughout all regions of Cambodia. The violence has a particular geography that is revealed in the physical remains of prisons, torture facilities, and mass graves. Considerable attention has been given to the accounts from two major sites of violence: S-21 Khmer Rouge prison and Cheung Ek Killing site. The accounts from these major landmarks have been constructed as master narratives of the violence that took place during the DK regime. The narratives are significant, although incomplete, for our understanding of the genocide. This paper seeks to examine survivors' memories and their everyday experiences in an unmarked site of violence: a former Khmer Rouge prison of Chamkar Siv. Using survivors' descriptions of their experiences during and after the Cambodian genocide years, I explore what survivors remember about their violent experiences; how they relate to the sites of violence on a day-to-day basis; and the personal significance of living amid those sites. This study makes significant

contribution in two areas of research: the growing literature on genocide in Cambodia and geographies of everyday life.

9:15 Kristen Traynor, Political Science,

Controlling the conversation: Framing of prisoner treatment during the 2005-2006 hunger strike at Guantánamo Bay.

Abstract: Scholars have been examining the framing of detainee treatment at U.S. military prisons since the Abu Ghraib scandal in 2004; however, research on the discussion of treatment at Guantánamo Bay is lacking in comparison to that of Abu Ghraib. This study aims to determine the ways in which elite media and governing elites framed the treatment of prisoners at the time of the first significant hunger strike at the prison (August 2005-February 2006). Using QDA Miner with WordStat and data from leading news outlets and governmental statements, this paper aims to explain whether framing in the mainstream media replicated the frames of the governing elite or acted more independently in reporting on the subject.

9:30 Kristin Weis, Philosophy,

Capital punishment and the social contract: A critique of capital punishment in the context of Thomas Hobbes' Leviathan.

Abstract: The issue of capital punishment and whether the state has the authority to punish people in such a way has received a lot of attention in philosophy, the media, and contemporary debates about human rights. It is my intent to explore this issue further through social contract theory and Thomas Hobbes' philosophy. While individuals enter into the social contract and give up their sovereignty to the government who may have unlimited power, the purpose of this contract is ultimately self-preservation and security. Many social contract philosophers are explicit in giving the government the right to punish, but differ on the extent to which an individual may be punished. Ultimately, I will argue that capital punishment is not compatible with Thomas Hobbes' theory because giving the government the right to punish an individual in such a way is contrary to the purpose of the social contract.

9:45 Amanda Clark, Political Science,

Let's (not) talk about sex: The impact of issue framing by anti-trafficking NGOs in northeast Ohio

Abstract: Public discourse of human trafficking in the U.S. almost exclusively focuses on the narrative of the female (or child) sex slave to the neglect of other forms of trafficking and other victims. Non-governmental organizations (NGOs) that purport to fight all forms of trafficking provide valuable awareness training to first responders, push local governments for anti-trafficking legislation, and provide victim services. Do these organizations help push this focus on sex trafficking through their own

outreach? This study examines two northeastern Ohio NGOs: Partners Against Trafficking of Humans-Stark (PATH-Stark) and the Collaborative Initiative to End Human Trafficking (The Collaborative) and two local media outlets: the Akron Beacon Journal and Canton Repository. Using content analysis of Facebook postings by the two groups and news stories in both papers, this study finds that both the NGOs and local media outlets follow national trends by focusing more on sex trafficking than other forms. The heavy focus on only one form of trafficking can lead to important gaps in legislation, impacting victims and the services that are provided to them.

10:00 Sweta Sen, Political Science,

Non-violent tendencies among violent groups.

Abstract: Since the end of the Cold War, there has been a tremendous shift in the nature of international conflicts. A constant decline of interstate warfare is observed by the academic world -coupled with a simultaneous rise of intrastate warfare. The change in the nature of war has sparked interest in a new kind of conflict groups – non-state armed actors. My research will focus on this particular group and their role in contemporary peace processes. International politics tends to have a very state-centric approach towards peace process.Non-State Armed Groups (NSAGs) are always relegated to the position of threats to security, and peace. Consequently, they are mostly absent from humanitarian norms, and laws. However, recognizing NSAGs in a homogeneously negative term as such distorts reality to a great extent. The paradox emerges when some NSAGs voluntarily becomes a party to humanitarian norms- despite any support of the international community. This is the puzzle, I wish to, pursue in my research project. The paper intends to build up some initial understanding of what kinds of groups voluntarily agree to be a part of a humanitarian negotiation, and in the process, aims to recognize what factors affect behavior of violent groups towards non-violent entities?

10:15 Hana Alghamdi, English,

Tragic heroes and social justice in The Merchant of Venice and Othello.

Abstract: In the Elizabethan era, and still in the modern day, people held faulty knowledge, a negative fixed image or idea of a person or group of people, referred to as a stereotype. Shakespeare's Venetian plays The Merchant of Venice and Othello, if taught in a specific way, provide exemplars which could correct the audiences' or readers' misconceptions of certain stigmatized persons or groups - in this case the African & the Jew. In my research paper, I argue that these plays, The Merchant of Venice and Othello, are able to correct faulty stereotypes and promote social justice, by the following. First, Shylock and Othello must be seen as merely tragic heroes; that is, as humans who have flaws. Second, the tragic plot in the two plays will generate

pity and fear in the audience. Third, the faulty misconceptions of the Jew and the Moor will be changed positively by humanizing Shylock and Othello.

Physics, Chemistry, & Biochemistry

Room 316

JUDGE(S): Dr. Jake Shelley, Dr. Bansidhar Datta

9:00 Sonya Adas, Chemistry & Biochemistry,

N-Hydroxysulfonamide nitroxyl (HNO) donors and their reactions with vitamin B_{12}.

Abstract: Nitroxyl (HNO) is an important biomolecule whose biological chemistry is challenging to study due to its rapid dimerization. As a result, a variety of HNO donors have been developed as in situ sources of HNO, including several N-hydroxysulfonamides . As part of a program aimed to understand the fundamental bioinorganic chemistry of HNO, improved approaches for preparing N-hydroxysulfonamide HNO donors have been established and the pathway by which they decompose to generate HNO is being studied with vitamin B12 derivatives.

9:15 DJ Haney, Physics,

CeCoIn5: Superconductivity and quantum criticality.

Abstract: I present the experimental study of the effect of pressure and impurities on the electrical transport properties of heavy fermion superconductor CeCoIn5. Our specific interest lies in a magnetic transition at zero temperature (i.e., a quantum critical transition), which drastically affects the behavior of the sample at finite temperatures and may also provide the physics that makes this sample superconducting in the first place.

9:30 Sanjoy Paul, Physics,

Liquid crystalline organic semiconductor for organic electronics applications.

Abstract: Organic electronics offers the possibility of producing low cost, flexible, and large area electronics. Organic semiconductors (OSCs) (organic polymers and crystals), used in organic electronics, are promising materials for novel optical and electronic devices such as organic light emitting diodes, organic field effect transistors, organic sensors, and organic photovoltaics. Liquid crystalline OSCs (LCOSCs) are semiconductors with phases intermediate between the highly ordered crystalline and completely disordered liquid phases. These materials offer many advantages including charge carrier transport, and photogeneration efficiency over conventional OSCs. In this talk, photogeneration and charge transport phenomenon in LCOSCs and in a phase separated LCOSC/Polymer structure for organic solar cell applications will be discussed.

9:45 Lewis Sharpnack, Physics,

The surface morphology of arsenic sulfide glass thin films and their prospects for display applications.

Abstract: Liquid crystal (LC) alignment layers present interesting challenges to both scientists and engineers. Understanding how the chemical and physical structure of a thin film coated onto glass can influence the orientation of LC molecules in a display is critical to advancing liquid crystal display (LCD) technologies. At present, LCDs rely on rubbed polymer coatings to orient the LC molecules. The process of rubbing creates anisotropic roughness in the surface. In research completed here at Kent State, this anisotropic roughness was shown to cause the alignment of LCs coated onto these materials. Essentially, the molecules align parallel to the smoothest direction of the surface. The rubbing process also creates scratches and static charges that can damage electronics patterned onto the surface. Ideally, a LC alignment layer would not require rubbing or any contact with the surface to generate good molecular alignment. Here, I will present my investigation into As2S3 coated glass substrates. Previous research has demonstrated that these materials align LCs after exposure to polarized blue light. My investigation into the surface morphology of these materials will be presented along with implications for the use of these materials in next generation LCDs.

10:00 Yang Zhou, Chemistry & Biochemistry,

Synthesis and photolysis of a novel family of photoactivatable HNO donors using the (3-hydroxy-2-naphthalenyl)methyl photolabile protecting group.

Abstract: The development of new nitroxyl (HNO) donors has received increasing attention due to their promise for treating congestive heart failure. We are developing new HNO donors, suitable for studying the fundamental bioinorganic chemistry of HNO, which rapidly release HNO via photoactivation. Herein, we report the synthesis of a new family of photoactivatable HNO donors 1 based on the use of the (3-hydroxy-2-naphthalenyl)methyl (HNM) phototrigger. Mechanistic photochemical studies of 1 leading to HNO generation (along with a competing side reaction) are discussed.

Gender Studies

Room 317

JUDGE(S): Dr. Susan Roxburgh, Ms. Melissa Spohn, Dr. Keith Wisdom

9:00 Alynn Gordon, Psychological Sciences,

What does it mean to be egalitarian or traditional today? A qualitative analysis.

Abstract: One issue currently facing gender role attitude scholars is the stall in egalitarianism, the cause of which is not well understood. We argue that one limitation of the extant examinations of gender role attitudes is the use of quantitative analysis as

social attitudes are dynamic and complex constructs which are difficult to capture with a score. Therefore, we suggest that to best understand today's gender role attitudes, a qualitative examination is warranted. We asked 33 general population adults from across the United States and in a convenience sample what they thought makes women and men egalitarian and traditional. Exploratory thematic coding analyses provided evidence that while many participants' responses fell within our current definitions of egalitarianism and traditionalism, a small but consistent percentage of individuals endorsed the idea of egalitarian essentialism. We also found support for gender differences: a higher percentage of men's responses contained negative connotations for the egalitarian woman question and a higher percentage of men's responses mentioned provider for the traditional man question. Findings from this study may be helpful to researchers interested in attitudinal measurement issues. More broadly, our study can help social scientists understand how individuals from the United States define egalitarianism and traditionalism today.

9:15 Alexandra Riecke-Gonzales, Journalism & Mass Communication,

Modern day motherhood: Lessons from Sex & the City.

Abstract: As women continue making advancements in the business world, they are gaining more opportunities to pursue careers. This has lead to a prevailing dialectical tension between career and motherhood for women. Popular mass media outlets, such as The Huffington Post, continue reporting a narrative that highlights motherhood, while subduing, if even mentioning at all, any women finding fulfillment in career alone. In this paper, it is argued that media outlets like The Huffington Post need to offer more narratives for women who are struggling with the dialectical tension between motherhood and career. To demonstrate this, we conducted a content analysis of both Huffington Post articles and the Sex and the City movies, based off of the popular television series, featuring four distinct, and equally acceptable, narratives of what it means to be a mother, career woman, or both. In this discussion, we also necessarily explore the relationship between marriage and motherhood expectations.

9:30 Andria Blackwood, Geography,

Client AWOL behavior within a Community-based Correctional Facility (CBCF): Examining issues of masculinity, risk factors, and influences.

Abstract: Research has found that much of recidivist behavior can be explained by some offenders' inability to overcome numerous obstacles after their release. To help overcome these obstacles, offenders may be sent to an alternative community-based correctional facility (CBCF). However, even with an array of rehabilitation opportunities within a CBCF, a number of offenders choose to leave before completing their mandated sentence and are considered to have gone AWOL. Utilizing data gathered from former male clients of a CBCF in Ohio, we apply a

mixed-methods approach to investigate the discernible characteristics of male offenders that choose to AWOL. Quantitative analysis reveals that age, ORAS risk level, and mental health are significant factors. Qualitative data gathered from interviews with reincarcerated male AWOL offenders indicate attitudes and behaviors surrounding masculinity influence male clients to focus on tangible short term gains rather than long-term prosocial outcomes. Our findings suggest that male AWOL behavior often centers on differing ideas and expressions of masculinity and the desire to regain a measure of power and control over their lives that has been lost through arrest and incarceration.

9:45 Karen Tollafield, Teaching, Learning, & Curriculum,

*Finding his narrative voice: Case study of a trans*man.*

Abstract: The purpose of the session is to offer insight into how narrative writing (prose and poetry) can both empower and Other LGBTQ youth. Research has shown that narrative writing and performance can be a powerful tool for youth from marginalized groups (e.g., Worthman, 2002; Haedicke, 2004), including LGBTQ youth (Halverson, 2005; 2008; 2010). Yet we also know that the narratives used in the classroom can distance and 'other' LGBTQ youth, particularly when they do not see themselves reflected in those narratives (Vetter, 2010). This session addresses the power and the peril of narratives in the English classroom through the case study of a transgender young adult who felt the need to go outside of school assignments in order to find his narrative voice and discovered how to help others through his writing and spoken word poetry. She will identify those assignments that served to 'other' this young man enough to make him uncomfortable in the English classroom (Blackburn, 2002) and will discuss how such assignments could be modified.

10:00 Rob Mckinney, Lifespan Development & Educational Sciences,

Does location really matter? Rural and urban health of LGBTQ

Abstract: Does the place where one resides matter? Members of the LGBTQ community may answer this question with a resounding "yes". An increasing amount of literature devoted to LGBTQ research examines the residency of individuals and possible influences on wellbeing. Counselors may ask, "Do LGBTQ individuals living in urban settings have an increased wellbeing? Are LGBTQ members at a higher risk of suicidality due to their rural residency?" Other various factors that researchers have sought to examine within this research area are familial ties, sexual risk-taking attitudes, general sexual knowledge, substance use and abuse, ethnicity, age, and gender. Presenters will provide an interactive presentation which combines dialogue, media, and a safe place to learn about this critical topic. Specifically, attendees will expand their general understanding of the LGBTQ community in regards to rural versus urban residency. Attendees will be able to identify factors that are favorable, as

well as those that are detrimental, for members of the LGBTQ population living in both a rural or urban environments. Finally, attendees will be able to identify possible resources in their own communities to assist with the overall wellbeing and clinical support of LGBTQ individuals.

10:15 Shellie Smith, Modern & Classical Language Studies,

Medea: The (d)Evolution of a Goddess

Abstract: "We women must look to one alone…" These words, immortalized by the playwright Euripides, illustrate the plight of women in ancient Greece. However, this lament was ironically uttered by one of the most powerful and feared women in antiquity, a woman made infamous for murder and bringing kings to ruin: the sorceress Medea. Looked down upon by the 'civilized' Greeks for being a 'barbarian,' Medea nevertheless had more noble beginnings. In the earliest sources, Medea was a Goddess in her own right. By the time Euripides wrote his interpretation of the myth in 431 BCE, Medea was too unconventional for Athenian taste. Euripides invented the story of Medea intentionally killing her children, an unpopular change to the myth; however, Euripides' play began the (d)evolution of Medea from powerful Goddess, to meddling potion-maker and murderess. This study focuses on the evolution of the Medea myth, and the reasons for Medea's demonization, focusing on the ancient sources and placing them within their respective contexts. Medea was unique among Goddesses in that she embodied both feminine and masculine attributes, a polar opposite of Athena in many ways. While her powers could not be denied, and her role in influencing the fates of early mythic rulers could not be forgotten, her untamed nature was too dangerous to patriarchal Greek society.

Attitudes, Emotions, & Behavior

Room 318

JUDGE(S): Mr. Greg Blundell, Dr. Judith Gere, Dr. Kathryn Kerns

9:00 Virginia Little, Sociology,

Genetically modified (GM) food and the European Union: How trust in infrastructure and technological attitudes towards science shape European lay attitudes across 43 countries.

Abstract: The world economy is becoming increasingly globalized. Consequently, this expansion increases the need for a safe and secure food production supply. Many scientists believe that feeding the world population means producing genetically modified (GM) foods that are resistant to extreme weather conditions. Currently, public opposition to GM food and crops is interpreted by scholars as the public's irrational or emotional perceptions of risk. This paper focuses on how levels of information and attitudes toward science effect attitudes towards GM food across

European countries. How do risk perception, trust in science and religion effect the public's opposition toward GM food? Guided by cultural theory of risk perception, how does the percentage of the population that lives in rural versus urban environment of a country affect the relationship between trust in science and risk of GM foods? Results show that . Both trust in government systems and positive technological attitudes towards science were positive significant predictors of more accepting attitudes toward GM food. A wide-variety of sociodemographic characteristics, as well as cultural factors contribute to this variation, including economic challenges in 2008.

9:15 Hua Meng, Business Administration,

This is not my lavender: The effect of scent names on scented product purchase intention.

Abstract: Drawing from dual coding theory, this study examines the effect of verbal cues (i.e., product scent names) on scented product purchase intention. Dual coding theory assumes that verbal stimuli trigger different types of sensory imagery. The current research focuses on olfactory imagery triggered by verbal stimuli. In a scented product context, verbal stimuli are defined as product scent names, which are either informative (e.g., Lavender Bouquet) or evocative (e.g., Floral Bouquet). Our research shows that olfactory imagery activated by informative (vs. evocative) scent names is more vivid. More (vs. less) vivid olfactory imagery leads to higher (vs. lower) expectation on scent pleasantness before smelling. However, after smelling, higher (vs. lower) expected scent pleasantness is more likely to be negatively (vs. positively) dis-confirmed. Consequently, negative (vs. positive) disconfirmation decreases (vs. increase) purchase intention. Our results provide strong evidence that informative scent names harm scented product purchase intention and the process of how it occurs is supported by a serial mediation analysis.

9:30 Steven Winterfeldt, Philosophy,

Attachment and suffering in Buddhism and Stoicism

Abstract: As moral and rational beings, we naturally have the desire to alleviate the suffering we experience as much as possible. The desire to alleviate at least our own suffering, if not also the suffering of others, has prompted many religious sages and philosophical thinkers to expound on how this might best be accomplished. I compare two philosophical traditions—Buddhism and Stoicism—which famously advocate a sort of non-attachment to the external world as the solution to the problem of suffering. But this sort of non-attachment can be interpreted in multiple ways. I examine non-attachment (or detachment) in light of the distinction between an encapsulation of our attachments and the complete extirpation of them. I then compare

the two interpretations directly and argue that the encapsulation of our attachments is preferable to the complete extirpation of them.

9:45 Cody Ruiz, Anthropology,

Redefining behavioral modernity with new fossil evidence from South Africa.

Abstract: The dominant paradigm for understanding the beginning of modern human behavior in the fossil record has focused on H. neanderthalensis in Western Europe c.a. 40ka. This Eurocentric model should be reexamined given recent fossil evidence from South Africa which suggests modern human behavior emerged much earlier, c.a. 100-70ka. Tracking key cultural and cognitive innovations in our human lineage is essential in understanding the rich and complex history of our species.

10:00 Shannon Claxton, Psychological Sciences,

Daily changes in affect following casual sexual relationships and experiences.

Abstract: The current study extends previous findings regarding consequences of engaging in casual sexual relationships and experiences (CSREs, Claxton & van Dulmen, 2013) by examining immediate reactions to CSREs. The sample (n=647) included both college students and community participants who completed online assessments for five days surrounding Halloween. Each day, participants reported the previous day's sexual behavior and their current affect (the extent they felt distressed, upset, guilty, irritable, jittery, afraid, and lonely). Results from Multi-Level Models revealed significant negative associations between CSRE engagement and feeling upset, lonely, and irritable the next day and a marginally significant association between CSRE engagement and feeling jittery. Individuals who engaged in CSREs reported significantly lower levels of these emotions than individuals who did not. Additionally, a significant positive association between CSRE engagement and feeling guilty emerged indicating individuals who engaged in a CSRE reported higher levels of guilt than individuals who did not. However, after controlling for the previous days affect, only the association between CSRE engagement and feeling guilty and feeling jittery remained. Results suggest that immediate reactions to CSRE engagement are mixed; individuals may feel an increase in guilt following a CSRE, but in general associations between CSRE engagement and other negative emotions are minimal.

10:15 Mehdi Ghayoumi, Computer Sciences,

Facial expression for emotion recognition.

Abstract: This paper describes a new automated facial expression analysis system that integrates Locality Sensitive Hashing (LSH) with Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA) to improve execution efficiency of emotion classification and continuous identification of unidentified facial expressions. Images are classified using feature-vectors on two most significant segments of face:

eye- segments and mouth-segment. LSH uses a family of hashing functions to map similar images in a set of collision-buckets. Taking a representative image from each cluster reduces the image space by pruning redundant similar images in the collision-buckets. The application of PCA and LDA reduces the dimension of the data-space. We describe the overall architecture and the implementation. The performance results show that the integration of LSH with PCA and LDA significantly improves computational efficiency, and improves the accuracy by reducing the frequency-bias of similar images during PCA and SVM stage. After the classification of image on database, we tag the collision-buckets with basic emotions, and apply LSH on new unidentified facial expressions to identify the emotions. This LSH based identification is suitable for fast continuous recognition of unidentified facial expressions.

Cognition & Language

Room 319

JUDGE(S): Clarissa Thompson, Dr., Sloane Burgess, Dr.

9:00 Patrick Cravalho, Lifespan Development & Educational Sciences,

How far will the ball go next time? Children and adults predictions imply implicit estimation of number sets.

Abstract: Do we implicitly represent the statistical properties of a number set as we process it? Processing data patterns (e.g., finding regularities in perceptual features) is critical for cognitive development. Previous research has demonstrated that children and adults attend to the properties of data sets (e.g., means and variance) when making comparisons between number sets (Masnick & Morris, 2008; Morris & Masnick, in press) or when scanning a single column of numbers (Cravalho, Morris, Was, & Masnick, 2013; 2014). These findings suggest that humans implicitly represent the statistical properties of number sets during the process of estimation. If people indeed implicitly estimate sets of numbers, we would expect that after asking them to predict a future set exemplar, they will choose a value that is close to the set mean. In two experiments, we investigated the relation between participants' future set exemplar predictions, the way the set numbers were presented, and strategies for making predictions. Participants' predictions were close to the set means (within 8%). Strategy self-reports suggest that participants implicitly estimated the sets using statistical information. Predictions were closer to the mean when the numbers were presented simultaneously than when they were presented sequentially.

9:15 Kyle Henning, Psychological Sciences,

Children's understanding of a word-learning strategy.

Abstract: Young children have the tendency to select a novel object (e.g., garlic press) rather than a familiar one (e.g. cup) when asked to identify the referent of a novel label

(e.g. “Which one is the zav?”). This tendency on the “disambiguation” task is particularly important for understanding language development. Previous studies have shown that older children typically use this word-learning strategy more reliably than younger children do. One possible explanation for this difference may be that older children develop a tendency to represent knowledge explicitly. In the current study, three- and four-year-olds received four standard “disambiguation” trials followed by four additional trials where they were first asked to decide which object they thought was going to be correct prior to hearing a novel label. Four-year-olds tended to report thinking that the novel object would be the correct answers significantly more than the three-year-olds. This supports the idea that older children are more likely to spontaneously represent words and objects as either ones “I know” or ones “I don’t know.”

9:30 Dale Hirsch, Lifespan Development & Educational Sciences,

Unique facilitation of semantic operations.

Abstract: Previous studies have demonstrated that complex cognitive processing requires efficient access to long-term memory. The current study provides evidence that specific cognitive operations may be required for the identification of different parts of speech. The results also support previous claims that memory for prior cognitive operations is facilitated through processing in working memory.

9:45 Jeremy Slocum, Psychological Sciences,

Investigating children's metacognitive representation of language.

Abstract: When asked to find the referent of an unfamiliar label, young children select a novel object over a familiar one. This so called “disambiguation effect” led researchers to theorize about the strategies children use when learning new words. While most of the existing research has investigated simple, statistical or logic-based strategies, we are interested how children learn when these strategies are not available. The current study introduces a purely metacognitive “disambiguation” task where, in order to succeed, children must possess a more abstract representation of language. Preliminary data suggests an age trend. 4-year olds are more likely than 3-year olds to succeed in the metacognitive task, and this trend is consistent with previous studies on children’s metacognition. The current study also examines the role of feedback on children’s performance. Specifically, we are interested in whether children interpret a lack of feedback as indicating an incorrect response.

10:00 Jenna Wall, Psychological Sciences,

Awareness of Lexical Ignorance predicts double-checking during novel word mapping.

Abstract: When asked which of two objects is the referent of a novel label, children tend to select a novel rather than a familiar object. Theorists disagree about the mechanisms underlying this so-called "disambiguation effect". Some argue that children select this object because it is unfamiliar and nameless. Others argue that children select this object because the familiar object already has a known name. In an eye-tracking study, Halberda (2006) found evidence for the latter. When asked to "look at the zav", adults and children tended to "double check" the familiar object before settling on the novel one. This pattern suggests that participants reject a familiar object as a possible referent after establishing the mismatch between its known label and the label they were asked to extend. In addition to replicating Halberda, the current study found that the tendency to double check was predicted by individual differences in children's awareness of their own knowledge. That is, children who were more aware of their lexical ignorance were more likely to use this adult-like strategy for determining the referent of a new word.

Poster Presentations • 10:00 - 11:15 AM

Master's Posters
Room 306

Master's I
JUDGE(S): Dr. Jacqueline Curtis, Dr. Brett Tippey

1 Matthew Dyne, Geography,

A tale of two cities: Comparative analysis of colonial capitals Léopoldville and Brazzaville.

Abstract: Both Brazzaville and Leopoldville (Kinshasa) lie directly across from each other on the River Congo. Despite their geographic similarities their histories and social institutions were very different during the colonial period in their respective countries. During the Age of Imperialism, Africa was cut up into several pieces by different European countries. Two countries which gained considerable colonial land and influence in Africa was France and Belgium. Belgium claimed Congo Free State, and today known as the Democratic Republic of the Congo and France claimed a number of territories known as French Equatorial Africa including the colony in question. French Congo, now the Republic of the Congo. It is located north of the Belgian colony. The most pressing difference between the two sides of the river is the treatment of the native population by the colonial governments. In short, Belgium and France had very different motives and experience in the colonial chess match and these differences were mirrored in the two cities. Throughout Africa there are few other instances where two places differed so much yet were so interconnected by their location.

2 Elizabeth Emerson, Philosophy,

The distance of authority.

Abstract: Being in a position of authority creates distance between the authority figure and other persons in the community. The person or persons of authority are therefore better able to address the needs of the group rather than the needs of the individual. This distance of authority is crucial to the survival of the group because intimate connection (face-to-face) with an individual is more emotionally and instinctively persuasive than the abstract concept of community. This distance of authority is beneficial for the creation and sanction of laws. It also makes war feasible: the distance of authority makes it easier to enter one's community into war, to allow members of one's community to die, and to encourage one's community to kill others outside of the community. The distance of authority, then, is a temporary, circumstance-specific dehumanization of humanity by the authority figure for the benefit of his or her kin.

3 Huanyang Zhao, Geography,

Spatio-temporal analyses of religious establishments in China: A case study of Zhejiang Province.

Abstract: This research examines the diffusion process how the religious institutions of Buddhism, Daoism, and Christianity developed in Zhejiang Province in China since 1949. By utilizing geospatial analytical tools and statistical analysis software, the specific spatial distributions and spatial diffusion process associated with the religious establishments are presented and discussed. The results revealed that hierarchical diffusion process was typical for the development of religious institutions. In addition, strong connections between the institutional development of studied religions and political events in China over the studied time period were also uncovered.

4 Lucas Koenig, Architecture,

The economic issues of twentieth century American housing.

Abstract: A difficult problem in the United States is the public's responsibility to ensure that low income families have access to adequate, affordable housing. This research will not only bring attention to these economic issues but will also outline the ways in which they are typically solved. My Research suggests that in the future, more adequate architectural training might be a valid solution. The problem is availability not affordability as demonstrated in the essay "Is There Enough Housing to Go Around?" This lack of availability of affordable housing can be attributed to a lack of architectural education in this area. Teaching architects how to solve these problems now could help to solve future housing problems. If this problem is not solved, many low income families will not even have the opportunity to live in adequate, affordable housing. The scope of this research will include the economic issues of all types of American housing during the twentieth century. The purpose of this study is to identify the economic issues in housing and the ways in which these issues are typically solved. Suggestions will then be made on how architects can become better equipped to solve these problems.

5 Andrew Kramer, Anthropology,

Tracing the Chan Polity: An epigraphic examination of the building and maintenance of hegemonic power at Calakmul.

Abstract: Focus on the transition of political power between polities has been central in studies on the Classic Maya. How did major city centers obtain power and command the construction of the iconic monumental architecture? How was hegemonic power transferred between rival city states? What are the elements of political power that can be seen in the archaeological record? This study attempts to answer these questions by examining the dynastic history of the Chan polity, more commonly known as the city state of Calakmul located on the Yucatan Peninsula. It

will address these questions through use of epigraphic decipherment of hieroglyphic texts. The study will trace the Chan glyph throughout its temporal use by the Maya and how the glyph was appropriated by the elites of the Chan kingdom to show cultural continuity and build solidarity among otherwise distant city enters. The Chan glyph can also provide indicators as to the relative geographic spread of the political power of the elites of Calakmul. This study will attempt to further our understanding of how political power was used by the ancient Maya and how the use of epigraphic analysis can help illuminate the murky topic of political power building and maintenance.

6 Kyle Delker, Architecture,

Why homeowners choose not to invest in retrofitting?: A study of energy retrofits on historical homes (pre 1950) in America.

Abstract: This paper focuses on the growing inefficient housing stock in America and the choices common homeowners make to improve a home's energy inefficiency. The study will investigate more specifically the deep energy retrofit process of these homes and why with over 130 million existing homes in America, homeowners are not choosing to upgrade the efficiency of mechanical systems and wall construction. Even small energy retrofits can improve a home's energy use drastically by reducing energy consumption up to 40 percent. However even with so many homes available for retrofit, much of America still has not improved the energy efficiency of their homes. The proposed work will reveal the current status of historic building retrofits and create further knowledge to why homeowners are not making more intelligent decisions about their home's energy consumption. With the aid of surveys and case studies on historical homes in northeastern United States, qualitative data will be gathered to clarify how informed homeowners are with consideration to their home's energy use as well as the importance of energy efficiency within their lives.

7 Hanieh Haji Molana, Architecture,

Evaluation of the sense of community in modern Iranian residential buildings, case of: Maskan-e Mehr, Shiraz, Iran.

Abstract: Since the 1979 Revolution in Iran, its people have wrestle with economic challenges and price inflation. Consequently, poor quality buildings and rapid urbanisation redefined the sense of community in Iranian cities.The Maskan-Mehr complex is one example of poor quality buildings with minimal attention to cultural and social considerations.The aim of this type of complex is to cluster many houses together to minimize costs by seeking efficiency of structure and construction.The Maskan-Mehr complex ignores cultural and historical features within the city of Shiraz which has a rich historical background that makes it the capital of Iranian culture. Ignoring the cultural and contextual framework in modern residential

buildings may have adverse impacts on residents' sense of community.Having a sense of community is derived from the place that connects residents with their culture and emplaces their traditions. The aim of this project is to understand impacts of modern residential complexes on residents' sense of community. A mixed-method analysis will be used to compare the vernacular and modern areas of the city and will provide rich data to describe residents' sense of community in both areas. Understanding the adverse impacts of modern buildings would be helpful to consider the role of the architecture in shaping the cultural identity of individuals.

8 Matt Dureiko, Architecture,

The symbiotic stadium: A design solution for integrating the stadium into the city.

Abstract: Stadia have the ability to reshape a city. What once was a place built for viewing an event, is now the most important piece of civic infrastructure. Today's modern stadia are privatized entities, and profit driven. Furthermore, as stadia become even more segregated from the public realm, they begin to cause harm, and deflate the community they are located in. By analyzing historical stadia, the concept of urban integration has come forward in stadia like Fenway Park, or Wrigley Field. The modern stadium must be imagined in this way, completely integrating itself within the community. The emotion and beauty of sport has diminished as a result of recent stadium design trends. The historical model allows the city to become more connected with the sport, and as a result both the city the team reap the benefits. This presentation seeks to set up a framework and a time-lapse design solution for how modern stadia can develop and benefit the city.

Master's II

JUDGE(S): Dr. Mary Hricko, Mr. William Lucak

9 Kaitlyn Moynihan, Architecture,

Process in a building: Wine making

Abstract: My research focuses on the architecture of wineries across the United States. I look specifically at the process of wine making and how that uses and produces energy and waste in the ecosystem. Is it possible that one component's output could be used as another component's input? I try to take measures to reassess and reduce the energy used to make wine by researching everything from the materials to the physical building environment. In order to get a complete understanding of what is happening with the process in a building and how that process can be altered to produce less energy waste and become more sustainable.

10 Matthew Nykamp, Architecture,

Blurring the edges: A study of alcohol friendly public spaces.

Abstract: This paper aims to study the degrees of success and the methods in which to control the outcome of public/private spaces that allow the consumption of alcohol. By utilizing case studies as well as taking the physical built environment of the space, the atmosphere and the social dynamics of the existing culture and outlining guidelines for policies as well as enforcement of these spaces it may be concluded that public spaces that have natural security that allow for the consumption of alcohol that is purchased from a restaurant/bar that has direct social and economic ties to the space are more likely be more effective as public places and succeed in the idea of place making without the need for regularly scheduled programs to take place. These spaces may be instrumental for entertainment districts as well as for encouraging a sense of community between both existing businesses as well as between users and inhabitants of local residences.

11 Abagale Burton, Architecture,

Abandonment or demolition: The value of historic neighborhood schools.

Abstract: Neighborhood schools are an essential cornerstone of communities across the United States, yet these historic structures now face a growing epidemic in relation to perceived challenges of meeting modern education standards. In June 2000, the National Trust for Historic Preservation added historic neighborhood schools to its annual list of America's Eleven Most Endangered Historic Places (Beaumont, 2002). Constructing new education facilities carries the intention to provide highly progressive environments for students and faculty alike; however, the aftermath of abandoning or demolishing historic schools as part of the process has generated problems in human health, finances, and community connectivity. The purpose of this research is to identify (a) strategic benefits of historic neighborhood schools; (b) consequences that accumulate after historic schools are perceived as obsolete; (c) variations in methods to restore such schools; and (d) the role of architecture in the progress of education. Case studies are explored within Akron, Fairlawn, and Circleville, Ohio. Interviews with practicing architects, education leaders, and experienced preservationists will offer first-hand accounts of obstacles and assets related to these buildings. The results represent a conscious effort to document projects that can act as catalysts for proactive communities.

12 Jennifer Carnprobst, Architecture,

Adaptive installations: Interactions for revitalizing urban streetscapes.

Abstract: Constant changes in climatic and socio-economic conditions of urban areas cause challenges for architectural planners when designing cities. Thus design techniques allowing flexibility in such conditions become necessary for the

revitalization of changing urban streetscapes (Dawson, 2007). Adaptive installations, which are temporary exhibits that respond to daily activities, are alternative to urban design due to their responsiveness to these changing conditions while requiring daily interactions. They strive to beautify communities, improve urban streetscapes, increase daily interactions, respond to changing conditions, and create more comfortable environmental conditions. The purpose of this study is to identify how these installations are creating more comfortable and livable urban communities. Through literature reviews and data collection a variety of conditions will be addressed since current adaptive installations often only address one environmental condition. Analyses will be performed to (a) study how these installations impacted the urban environments; (b) identify how people interacted with them; (c) support the proposal of these technologies in different areas; and (d) identify how a collaboration of new technologies can be utilized to become more permanent in the realm of urban architecture. The purpose of this analysis is to find possible technologies that can be implemented in multiple climactic conditions bridging the gap between temporary installations and permanent adaptive architecture to enhance urban streetscapes.

13 Rachel Smith, Architecture,

Potential of media facades to improve communication in urban environments.

Abstract: Complex and crowded settings, such as urban environments, require bold forms of communication to relay messages to its vast amount of occupants (Brown, Izenour, & Venturi, 1972). Media facades are a new and bold method of technology used in urban environments to provide communication about culture, events, and information as well as promote interactivity with its viewers. The purpose of this study is to determine (a) the communication goals of different types of media facades, (b) elements that make communication and interactivity successful within media façades, (c) what technologies provide successful communication and interaction and (d) whether or not media facades will become a necessary element in urban environments to stimulate communication or whether they will become obsolete in the future. Three media facades on buildings from different urban environments will be analyzed through literature review to determine their effectiveness in communication. Data on how the urban environment was impacted and how people react to the media façade will be used to determine what effect the media façade has. The results of these findings may help to determine appropriate locations and uses of media facades in urban environments for the use of valuable communication and information distribution.

14 Alexa Copeland, Architecture,

Natural ventilations impact on preventing the spread of Airborne Influenza A and design of hospital patient rooms.

Abstract: Hospitals serve a vital role in communities around the world; however a large problem facing the practice in general and patient wards are Healthcare-Associated Infection (HAI). For every twenty-five patients that go to receive medical treatment at hospitals one acquires a disease or infection from the hospital whether another patient or an airborne pathogen. In 2008 Medicare and Medicaid stopped covering HAIs, due to their preventable nature and resulting usually from hospital failure/ mistakes. The Center for Disease Control has produced HAI prevention measures, which are mainly physical measures like, excess cleaning, and vaccination. Little emphasis has been placed on the buildings capabilities, little natural ventilation for reducing and eliminating HAI. Influenza A, commonly known as the seasonal flu is an infection associated with HAIs. In 2007 a recorded 4,500 deaths were caused by annual influenza associated deaths with underlying pneumonia or influenza causes. Northeast hospital patient room designs that utilize more air changes per hour in patient rooms' especially outdoor air changes per hour can more effectively disperse and inactivate airborne Influenza A. Preventative measures can be implemented before disease transmission starts to occur in a hospital ward and thus other precautionary measures can become secondary measures.

15 Carolyn Emmer, Architecture,

Phenomenological re-takes

Abstract: "Phenomenological Re-Takes" looks at how street design can be responsive through phenomenology. This particular project aims to investigate street design in an urban environment as constrained by three phenomenologically biased design guidelines; intersubjectiviy, embodiment, and post-phenomenology. An iterative process using research, diagrammatic strategies, and design guideline development will be showcased in a comprehensive design application. Ultimately urban streetscape phenomenology will be better understood through a composite phenomenological lens. Part of this project will also focus on the way in which designers emerge from a state of phenomenological reduction to a position through which design solutions are developed and implemented. Demonstration of the application of phenomenological design theory in the design practice will show the relevance of phenomenology in both current and projective design practices.

Master's III

JUDGE(S): Mr. Jon Yoder, Mr. Mark Pike

16 Clarisse Gates, Architecture,

Where does the perception of built environment overlap?

Abstract: There exists a gap between designers' intentions and the resulting built environment. The theoretical research conducted by Molly Boeka Cannon and her Ph. D. research titled, "Exploring the Nature of Space for Human Behavior in Ordinary Structured Environments" is background for this study of the built environment. The study being conducted is a process of interviewing occupants of multiple sites in Cleveland, Ohio and young design students about which aspects of a site the same site that need to be improved. The purpose is to see which aspects design students find more important to change versus those of the site occupants. There are five categories of questions that include material, program, car traffic, safety, and maintenance. The answers from the groups are compared to see the contrasts and similarities, still remaining with a number value. The purpose of analyzing the answers from the interviews is to measure how far apart, or how close each groups' point of views are from each other. The significance of this research is to show young designers the difference in their perception of the built environment from the perception of the actual occupants of that same built environment.

17 Eric Leathers, Architecture,

Process to place: Purpose in architecture at the local scale.

Abstract: The relevance associated with an architecture concerned with the local, site, detail, material, and community is critical as the built environment has continued to succumb to globalization and, as a result, caused extreme loss associated with place and local culture. Despite the abundance in discourse that exists relative to this notion, there is little understood in relation to the methods and processes by which architecture associated with place and the local is achieved. This paper will seek to (a) understand place as a concept, (b) characterize architecture at the local scale, and (c) understand the methods, processes, and impressions that achieve the work associated with architectural practices concerned with an architecture that is resistant. (Frampton, 1983) A study will qualitatively examine a collection of architectural practices concerned with a local oriented approach. Interviews will then seek to uncover and understand the processes associated with how each practice creates architecture at the local scale and how the methods that model their business contribute. This could then establish an approach to architectural practice that achieves architecture at the local scale and with that resists lost place.

18 Jonathan Nagy, Architecture,

Situating the individual: To choose to be a body in public.

Abstract: There exists a reciprocity between the urban and the urban-dweller such that they give shape to each other. The individual continually interacts with the city to form the urban and is given form in return. I have a two-track model of understanding how an individual can participate in the urban: 1. As a contributing member to a group [Focused Energy] 2. As a singularity manipulating the urban through conscious intervention [Dispersed Energy]. My research will consist of demonstrating a process of community engagement. I am combining activities related to the creative observation and documentation of urban environments with a traditional community meeting format. Techniques have been gathered through extensive research into participatory techniques in both practices of design and art. The intent was to develop a set of tools that can be combined to accommodate the unique narratives required by a given design project. Engagement is taken to mean, "a process of materially, and concretely, linking the individual to their processes of change," as compared to the conventional intent of creating a temporary bond toward achieving an immediate goal (i.e., engagement toward marriage; conversation to reach common understanding). I see this process as a way for building a foundation for future work in the community by allowing people to understand their capacity to produce change.

19 David Sparling, Architecture,

Place attachment and participatory value: Battling designer colonialism.

Abstract: This paper investigates the methods that architects, landscape designers, and urban planners gather and apply place specific data to community development interventions. Research suggests sustainable communities require preservation of cultural and place specific use rituals, memories, and valuation know as place attachment. This deep connection to place can stand contrary to design imposed values making local participation, data collection and application the difference between facilitating solutions and projecting misplaced attachment. Through the comparative methodological investigation of community design practices this paper will inquire the legitimacy of current data collection, community participation and application to design. These methods will be filtered through theories of place attachment and emerging phenomenological representation and design methods. This potential lack of ecological and holistic view of habitation and centralization not only threaten the sustainability of urban centers, it articulates a devaluation of humanity and community through the disintegration of place. This paper will highlight the importance of a well crafted design process and the creative potentials possible through the exploration of new representational methods.

20 Christopher Moyer, Architecture,

The perception of contemporary architecture and the "Starchitect": A study of buildings by famous architects as experienced by the layperson.

Abstract: The term "Starchitect" is referred to an architect who has reached such an acclaimed status within the architectural community that they then become media and household names of the general populous (or layperson) with no design background. These architects often command immense budgets to create "iconic" designs not related to the surrounding communities. The problem arises when the layperson is the one who mostly experiences and inhabits these buildings. Is the cost of designing and constructing these buildings worth the experiential outcome of its common inhabitants? Three projects in Cleveland designed by "Starchitects" will be studied with respect to the layperson's experience, the Rock and Roll Hall of Fame by I. M. Pei, the Peter B. Lewis Building by Frank Gehry, and the Museum of Contemporary Art by Farshid Moussavi. The participants will respond with key questions about the buildings regarding the quality, experience, and their perception of the project without technical information about the cost and performance of it, they will then be informed about the issues of cost and performance to see if their responses change based on that knowledge. Through study of the results, a conclusion can be drawn of the community's perception of the buildings and extrapolated to determine if projects designed by the "Starchitect" are worth their cost.

21 Lydia Karoscik, Architecture,

The architecture of science fiction film - "Alien" influences on modern building typologies.

Abstract: Science fiction has continually fascinated architects, and architectural research, as film is widely lauded for its portrayal of space. The architecture in a science fiction film is meant to convey future cultures or environmental changes, usually with utopian or dystopian connotations to express that the world has changed from what is known , to an unfamiliar, almost unrecognizable planet. The purpose of this study is to delve deeper into the existing knowledge on the relationship between science fiction and architecture. The study will a) explore the similarities and differences in architecture portrayal through the top grossing Science Fiction Films from 1990 to 2014, b) develop a scale or graph based on those different approaches and, c) provide a lens of comparison between those films and contemporary building types. To achieve these ends, film examinations and surveys will be conducted to collect a baseline of data on how different types of buildings (corporate, government, residential apartments, retail, etc.) are depicted, to then compare those findings to real-world applications in architecture. This research will show that science fiction films can still influence architecture beyond the obvious futuristic portrayals, and that the films use exaggerated methods of description used in current building design.

22 Katie Hartman, Architecture,

Soundscape: Urban ecology and environmental health.

Abstract: Soundscape: Urban Ecology and Environmental Health The purpose of this study is to thoroughly investigate how innovative soundscape design can impact an environment on a psychological and physiological scale. Emerging acoustic ecological research has shown that cities contain high levels of continuous, pollutant noise and can be said to affect overall quality of life. Understanding these sensory elements is significant to designers because it is essential to how humans perceive cities. Designers have typically sought to create aesthetically appealing and vibrant environments through visual and physical components, oftentimes with lesser consideration of the neglected acoustic ecology. There is little information in regards to the problem of urban noise as it is difficult to measure, therefore quantitative statistics can only be determined through pattern, composition, spatial variability and acoustic interaction (Pijanowski 2010). Qualitative or subjective data, through interview is essential in understanding how urban scenarios in which soundscape intervention has been incorporated, both positively and negatively. These findings, as well as interdisciplinary research into existing soundscape intervention, will determine the importance of engaging in the soundscape of the city, and whether/how much the city should be enriched with natural sounds as well as controlled in terms of noise reduction and strategic moments of silent seclusion.

Master's IV

JUDGE(S): Mr. Joseph Ferut, Ms. Cindy Kristof

23 Andrew Sansone, Architecture,

The affects of sound in an urban setting.

Abstract: This study will be a comprehensive examination of the affects of sound on the inhabitants and patrons of city environments. Sound can often be eclipsed by concerns about elements like scenery and air quality, but is actually quite important to the dynamic of the city in addition to its users' health and happiness. Investigations will be performed on the affects of sounds typically heard in an urban setting such as vehicular, construction and verbal communication. These analyses will delineate the positive noises from the negative through the utilization of a variety of studies including SmartCitizen devices and a detailed survey distributed in the test city: Cleveland, Ohio. The SmartCitizen devices, affixed to light posts, will be installed on 9th Street and will use a sound sensor to record noise levels. Observations and recordings of patterns will be informed by survey data such as the respondents' favorite and least favorite sounds in the city, why they do or do not enjoy them, and from what they feel the setting could prosper. These inquiries are expected to generate new information about what mediations can create a healthier, more positive

environment to help better understand how a city's sound can be shaped positively or curatively.

24 Tyler Middendorf, Architecture,

The sound of religion: Asserting authority through architectural acoustics.

Abstract: Acoustic design is a high priority in the broader architecture of Christian churches. Material selection, surface quality, relative orientation of objects and people, and volume of space within churches are all influenced by how they will affect the acoustics of the space. The sound quality in churches affects both what is heard by the congregation, and how the information is received. In the nave and arcades, two to three second reverb times with relatively long sustain are preferred in most churches, while reverb is generally dampened in the front of the church near the altar, lectern, and pulpit and in the rear of the church near the main entry. Distinct echo and uncontrolled sounds emanating from outside the church are generally reduced or removed. Providing for these simple acoustic qualities ensures that the minister is clearly heard by the congregation with relatively little distortion or distraction and that the collective spoken and sung response from the congregation is loud and cohesive, essentially a single voice. Through survey field study, I aim to show that the acoustic qualities of the church, combined with the sound components of the religious mass, increase trust, cooperation, and acceptance of the congregation.

25 Ariel Yang, Music,

Representing China's musics: An analysis of Disney's Mulan soundtracks.

Abstract: Disney movies are definitely widely known and loved worldwide. One of my first Disney movies, The Lion King, impressed me deeply by those animals, the animal kingdom, African jungle, and powerful beat African-styled music – though they are largely westernized, both the movie and music deeply influenced my understanding about the world. That's the reality of those non-Western topic Disney movies – they show the most typical elements of the specific culture, but from the understanding of the moviemakers. For example, Mulan, it is not a completely Chinese movie made by Disney, but a Disney made Chinese topic movie. It was still attractive to Chinese customers. Not because of Mulan is one of the most familiar topics for Chinese, but Chinese people wonder what do outsiders think about us.

26 Deanna Nebel, Music,

Maï: A Western saxophone and Eastern shakuhachi hybrid.

Abstract: Ryo Noda is a well-known saxophone composer and performer. Born in Japan but trained in France, his musical compositions blend influences from both Japanese traditional music, namely the shakuhachi flute, and French avant-garde composition. The alto saxophone solo piece "Maï" is used as a case study to analyze

some of his compositional techniques and cultural influences. With so many influences on the composer, being from both two schools of musical thought, are his pieces more Western or Eastern in style and substance? The purpose of this poster is to analyze "Maï's" musical composition and cultural influences to determine if the work is more Eastern or Western in nature. Ultimately, the work will prove to be Western or hybridized on the surface, but Japanese in substance. A blend of music theory and cultural analysis is used to achieve this end. Saxophonists studying "Maï" and other Noda pieces can use this analysis to enhance their performances.

27 Krystal Duchi, Health Sciences,

Acoustic correlates of speaker confidence: Can they tell I don't know?

Abstract: When nervous, unprepared, or less knowledgeable about a subject area, speakers may become increasingly worried that they are revealing telling acoustic cues about their anxiety level (e.g., hesitation before speaking or vocal jitter) to their audience. The current study is a two-part (production/perception) experiment that sought to evaluate when 1) speakers produce telling acoustics and 2) listeners become sensitive to vocal confidence cues produced by the speaker. The results indicated that when a speaker produced discriminating (un)confidence cues (e.g., rising intonation and delayed speech onset), the listener was significantly better able to predict the speaker's confidence level. Interestingly, the speaker was significantly more likely to produce discriminating acoustic cues when more social pressure was applied, suggesting that speakers may intentionally communicate information about confidence. This indicates that confidence cues may be produced for the benefit of the listener and not to the detriment of the speaker.

28 Stephen Bennett, Architecture,

Biomimicry for the photothermal properties of the building envelope.

Abstract: The main objective of this research is to investigate the design principles natural organisms utilize to survive within specific environments to help understand how buildings can adapt and minimize negative environmental impacts on urban conditions, primarily through responsive building envelopes. Specifically, this research explores the effectiveness of a strategy adapted by the Reed frog Hyperolius viridiflavus nitidulus, in which it turns a brilliant white color to reflect the hot desert sun and avoid overheating without the use of evaporative cooling, and to minimize UV absorption. This research will analyze the photothermal efficiency and solar absorptance of a typical office building, and determine performance for a baseline albedo, then compare these properties with a hypothetical surface with the properties exhibited by the reed frog. The performance of the proposed envelope is then analyzed using building energy performance simulation software to determine the difference in solar heat gain during various seasons. This research will allow a higher level of

dynamism in low-energy solutions for buildings, and expand options for controlling heat and light. Because buildings use a significant portion of their energy to heat and cool the interior, bio-inspired building skin designs can potentially reduce the energy consumed by the building significantly.

Master's V

JUDGE(S): Dr. Adil Sharag-Eldin, Ms. Karen Hillman

29 Keith Ely, Architecture,

Biomimicry in Architecture: Methods of improved building skin performance through integration of structural color.

Abstract: "The truth is, natural organisms have managed to do everything we want to do without guzzling fossil fuels, polluting the planet or mortgaging the future." -- Janine Benyus Buildings are one of the top contributors to carbon emissions and the building skin is responsible for 50% of the total energy consumption primarily because the role it plays in regulating the lighting, heating, cooling, and ventilation. The goal of this study is to explore the biomimetic approaches and techniques to inform a design of building façade. Using inspiration derived from biological organisms, this research will specifically focus on structural color and its potential to regulate thermal and solar gain as a to create more adaptable and sustainable buildings. The morphology of structural colors observed in nature cause color change thru angle of incidence, reflections, and refractions in order to regulate body temperature or communicate. This study will investigate how aesthetics and functional aspects can go hand in hand while exploring suitable application for architecture. This study will particularly analyze the the size and scale at which structural color works exploring possible ways to inform biologically inspired architectural façade.

30 Jonathan Connelly, Architecture,

Biomimetic applications in architecture: Economy and sustainability.

Abstract: Biomimetics are being studied by scientists, architects, and engineers to identify abilities of biological species that may benefit architectural design. The problem to be solved is to determine potential methods by which biomimetic design may be incorporated to increase sustainability. The numerous biological studies which have not sought a potential relation to architecture have created a gap in potential reason for application. These findings may provide additional motivation for designers to pursue biomimetic design. The purpose of this research is to (a) identify case studies which have been conducted and how they have been or may be applied to architecture; (b) analyze economic benefits of biomimetic design; and (c) propose new potential methods by which biomimetics may be applied to architecture in the future according to the results of various studies. This research will be conducted through the

analysis of case studies and resulting practical application to architecture. The results will be expressed qualitatively and qualitatively, and this study is important because it will provide insight regarding different ways that biological phenomena which have not previously been applied to architecture may be practically applied to architecture building projects.

31 Jeffrey Ury, Architecture,

Applications of structural coloration in thermoregulation through building skin design.

Abstract: Biomimetic design principles are investigated for adapting building thermoregulation to rapidly changing climatic conditions, primarily through façade design. The structural coloration principles of the Hercules Beetle to regulate body temperature within a hot-humid conditions is the primary focus of the study. Specifically, thin-film interference as a type of structural coloration found in the Hercules Beetle will be studied to derive the principles behind its adaptation. The structural colors operate on a nano-scale. As such, it is not directly compatible with building skin design and this challenge is at the core of the investigation. By deriving concepts of thin-film interference in biology and adapting them to a larger, buildable scale, performative gaps in existing methods of sustainable façade design can be filled. The design and construction of a sustainable façade system utilizing biomimetic structural color is hypothesized to create a homeostatic relationship with the environments we exist in. By studying how biological concepts have adapted to their environment over millions of years of evolution, designers can learn to create smarter solutions for façade design in rapidly changing climatic conditions.

32 Ben Wilston, Architecture,

Bioclimatic design in an urban context.

Abstract: The failure of current Bioclimatic design strategies to recognize factors other than heat and humidity can result in strategic suggestions idealistically ignorant to the realities of our modern cities. The goal of bioclimatic design is maintain a consistent presence within human's thermal comfort zone, using climate specific building tactics that decrease the need for mechanical systems. Many of these tactics used in bioclimatic design are derived from the study of historical cultures that were able to achieve thermal comfort without the availability of modern HVAC. However, the full effects of the implementation of these tactics to our dense modern cities are unknown. Regional climatic zones are often too broad to describe urban climates. Urban heat island effect, a phenomenon created by the built environment is one example of how a micro-climate is created that may differ from the regional norm. Other factors such as air quality are also factors neglected by bioclimatic design. This paper looks to study weather data collected by the five airports within the city of

Chicago to test the practicality of Bioclimatic design when both microclimates and air quality are factored in.

33 Nathan Yanosick, Architecture,

Urban form and outdoor thermal stress.

Abstract: The growing trend of millennials returning to the city brings about an expansion of urban fabric and the desire for livable outdoor urban spaces. The renewal and expansion of urban fabric in times of climate change and rising air temperatures brings up the question of the effect of that urban fabric's form on outdoor thermal stress. This thermal stress has been proven to have adverse effects on social and physical health on humans. Urban planners and designers are prescribed base building forms through properties such as Floor Area Ratio (FAR), Building Height, and Building Façade (Wall to window Ratio) through land use and zoning ordinances and codes such as ASHRAE 90.1 suggest efficient use of energy for indoor thermal comfort. However, very less attention is paid to the creation of outdoor thermal conditions as the built environment is in in the making. The intent of this study is to analyze, through digital simulation methods and using the UTCI scale, how these properties specifically affect outdoor thermal stress and what specific consequences that would have for the outdoor environment in order to help planners and designers understand the impact of their decisions on public health.

34 Cathleen Matuzak, Architecture,

Asthma and allergies exacerbated by buildings.

Abstract: An estimated 50 million Americans suffer from all types of allergies including indoor/outdoor, food & drug, latex, insect, skin and eye allergies. Allergy prevalence overall has been increasing since the early 1980s across all age, sex and racial groups. This shows that hereditary or cultural factors do not influence asthma and allergies, but possibly that everyone, regardless of age, sex, and racial groups, spend most of their times in buildings that exacerbate allergies and asthma. By using correlational research, specifically the relationship studies, the method clarifies the relationship between larger buildings solely dependent on mechanical units to control air temperature, occupants spending most of their time indoors, and the increase in allergies and asthma. Buildings that were constructed 50 years ago up to now were built tighter as to reduce the amount of the conditioned air escaping from the mechanical units. These buildings also removed operational windows for the same reason. By doing this, these buildings lost the ability to get fresh air controlled by occupants and the opportunity for cross ventilation. These closed-off buildings seal the VOCs, chemicals, odors, and moisture that occurs within the building to remain in the building. This toxic cocktail can result in a creation of deadly mold and bacteria.

35 Amanda Curry, Architecture,

Living walls: A green way to transform the built environment for the healthier.

Abstract: An increase of urbanization means increased energy usage, urban heat island effect, greenhouse gas emissions, storm water runoff, reduced urban biodiversity, poor air quality, and increased noise refraction; all of which can be minimized by the integration of living walls. Living Walls are self-sufficient vertical gardens that are purposely attached to- and meaningfully incorporated within- building design. They can be both interior and exterior walls that include a structural support system in which the roots of the plants grow. These walls enhance the health and well-being of the public and may supply the inhabitants with means of urban food production. The purpose of this study is to evaluate the benefits of living walls within an urban context on an individual building and city-wide scale and address the necessity of their incorporation into building design in cities throughout the country. This research will be conducted through a series of case studies and incorporate quantitative data based on the measurable results of air quality, reviewing published works on this topic, studies of the phenomenon, and interviewing experts in the field of environmental sustainability. The scope of this research will range from the benefits that a living wall has on the individual building as well as the overall effects on the city as a whole.

Master's VI

JUDGE(S): Dr. Richard Mangrum, Dr. Reid Coffman

36 Colin Fishbaugh, Architecture,

The biophilic city: Urban spatial recovery through revealing the urban landscape.

Abstract: Cleveland is being reborn into an era where urban landscapes are playing a greater role in the definition of the sustainable city. As the Cleveland begins its transformation into a city demanding more from its urban environment, the need for an improved integration with its urban landscape becomes crucial. The issue which arises in Cleveland is the lack of interaction between the city and its landscape. Existing parks and green spaces are present within the city but act simply as individual, heterogeneous spaces, offering little to no uniformity or ecological benefits to the urban environment. The spaces do not function together as a network of landscape infrastructure but rather act as individual units holding spaces within the urban fabric. As the city begins to advance towards a more sustainable, biophilic city, the urban landscape needs to function as a machine for the city, bringing with it not only aesthetic value but also provide ecological services to the city, creating a healthier, multisensory environment for its users to inhabit. By viewing the landscape as an urban infrastructure and a biophilic environment, the city can begin to advance and adapt to time and become deeply integrated with its context.

37 Jonathan Holland, Architecture,

Climatic resiliency: Environmentally resilient design strategies for Slavic Village, Cleveland, Ohio.

Abstract: The goal of this paper is to analyze the environmental related inherencies through a series of analytical maps to develop location specific climate resilient strategies for Slavic Village, Cleveland Ohio. This will be accomplished through investigation of current land use, land cover and urban texture effects on temperature and air quality in Slavic Village. A Comparison analysis will reveal underutilized site components for this urban village. There will be investigation into building density, vacant to non-vacant parcel information and lot size information, which will contribute directly to current land cover issues; investigation into current land use, identifying impervious and permeable surfaces, and built and open spaces which will include evaluations of industrial and residential spaces, meaning the identification of how the amount of industry, vacant land, or residential effects temperature. Furthermore, the current land use, land cover and urban texture effects on air quality in Slavic Village will be analyzed. There will be investigation into environmental conditions i.e. weather and climate information and temperature information which will include investigation into how lake effect snow impacts the community including investigation into current building mechanical systems and their effects. Ultimately the climate resilient design strategies that can be implemented will be discovered.

38 Peter Harjung, Architecture,

Adapting to climate change: The role of demographics and the built environment in legacy cities.

Abstract: The rise in number of weather events has caused an economic and health burden to the people who live in legacy cities. The city of Cleveland, Ohio provides an opportunity to study the effects of weather events on the population and their relationship to the built environment. This study investigates the role of demographics and the built environment and how they impact the health of the community of Slavic Village in Cleveland, Ohio, which is highlighted by the Center for Disease Control and Cleveland's Climate Action Plan as a vulnerable area. This approach will inform the city of the needs of the population so that the officials can target the most in need in the case of extreme weather events. Information will be collected through existing census data to determine the age, gender, ethnic, and education level of the residents. The structures of the community will be documented with satellite imagery, geographic information system data and visual surveys to collect the condition of structures in the village. Health data will be gathered from regional averages, and safety service records, focusing on climate related illness. The variables of the data

analysis will generate a series of diagrams that will be compare the built environment, health and demographic data to develop climate resilient strategies for Slavic Village.

39 Katherine Mitchell, Architecture,

Green infrastructure: A devise for reducing rising rates of obesity.

Abstract: In today's society there is an ever increasing level of obesity, especially in our children. A leading cause in this epidemic is the ever declining amount of regular physical activity. In our developed areas, such as cities or densely populated suburbs, this reduction of physical activity is due to the desire to use personal transportation when moving from one point to another. Green infrastructure, a type of infrastructure designed to mimic nature's water system, can possibly be one tool used to increase the amount of active transportation in urban areas. In order to make the connection between green infrastructure and reduced levels of obesity two questions need to be answered. The first question is: what types of green infrastructure are most easily implemented in these already dense areas? The second question to be answered is: can the types of green infrastructure found to be easily implemented increase active transportation? Hypothetically, if there is an increase in certain types of green infrastructure in developed areas more people will be inclined to use active transportation instead of personal vehicles. Thus, with the increased amount of bicycling or walking the levels of obesity will decline.

40 Aliaa Maar, Applied Engineering, Sustainability, & Technology,

Fuel cells as an alternative source of energy and spiral fuel cell manufacturing investigation.

Abstract: In the same context of the world pursue of Clean and Reliable source of energy, the importance of investigation on Fuel Cell and its development has raised to its maximum. One of the proposed fuel cell is the Spiral Fuel Cell. The Spiral fuel cell is a spiral model that has been invented by CP-SOFC IP, LLC Company in BUFFALO, NY in May 22, 2012 under application no. 2009/0117, 435. It is has a tubular design with double closed spiral cross section. The purpose of this investigation is to create a model of a spiral fuel cell using 3D production process and the model will be tested to study the influence manufacturing parameter that might affect the performance. A few steps will be followed in order to generate the final model. Firstly, the spiral cell will be designed using a 3D modeling program and after verifying the design the theoretical power density output will be calculated. Secondly, the Model will be printed using a 3D printer. Then the generated model will be checked against the design and the manufacturing defect. The final approved model design(s) will be produced using Selective Laser Sintering 3D printer using Yttria Stablized Zirconia powder with NiO. After the fuel cell been produced the microstructure will be checked using SEM Machine.

41 Nuttapong Phantkankum, Applied Engineering, Sustainability, & Technology,

Development of a small energy electron accelerator for surface treatment and coatings.

Abstract: Development of a Small Energy Electron Accelerator for surface treatment and coatings N. PHANTKANKUM, R.M. URIBE, Kent State University. – Treatment with ionizing radiation can modify the physical, chemical or biological properties of materials. By using this method one can obtain many beneficial effects such as surface treatment and coatings. Electron Beam Accelerators are durable and reliable equipment for these applications. This project focuses on designing and building an electron accelerator using a 125 keV electron gun, high voltage cables, and a power supply. The work consisted of the mechanical design for the overall unit including the beam exposure volume, the platform mechanism to move samples in and out of the beam exposure volume, the radiation shielding, and the safety devices. PENELOPE Monte Carlo Code simulations were performed to determine the amount of shielding material and the dose received by a sample under different operation conditions of the unit. The unit will be built under the design and simulation conditions to get safely appropriate doses. A diagram of the design will be presented as well as initial dose measurements of radiation to confirm the simulation results once the unit construction is finished.

42 Justin Fye, Architecture,

Digitally mobile design [experiential architecture for stadia].

Abstract: Inherent in the nature of architectural design and discourse is a particular cross-pollination of ideas spanning multiple fields of study. Designing for sports stadia and arenas, in particular, operates at a unique confluence between the physical and virtual realms of life. Constant connectivity and electronic devices are omnipresent in the human race of the 21st century. This much we know. But what might this knowledge portend for the future of sports arenas? The future of stadium design requires a new understanding of technology already in use, and a new willingness to project for technology not yet innovated, for generations of users not yet consuming. A context-aware digitally mobile architecture producing experiential, flexible and transformable architecture may just be the solution the sporting world needs to regain its hold on the live audience over the virtual.

Master's VII

JUDGE(S): Mr. Ken Burhanna, Dr. Yanhai Du

43 Jeffrey Jasinski, Architecture,

PIN [Protean Infrastructural Network]

Abstract: Despite being labeled as a "legacy" or "Rust Belt" city, Cleveland, Ohio industrial manufacturing and production sectors still pose large regional economic impact. Current proposals, such as the St. Lawrence Seaway expansion, and studies of the potential impact of the Great Lakes mega region have put forth a series of questions surrounding the potential of cities to alter their future narrative surrounding their economic and cultural landscape. At the same time, an increasingly ubiquitous digital world is taking shape, merging data and information with physical spaces. This is further leading to questions of how infrastructure and technology will inform our future cities. Architects and urbanists are particularly suited to study the impacts of new infrastructural, energy, and ecological needs that result from these emerging concepts. PIN looks at the intersection of these needs - the potential to impact a regional economy, the infrastructure of ambient digital technologies through digitally coded environments, and their interaction with a citizenry. By utilizing infrastructure as a disruptive technology to create both economic and cultural value, PIN will propose alternative visions of how our future city may look.

44 Bosheng Liu, Architecture,

Potential of module construction for architecture industry: Using 3D printed flexible surface.

Abstract: Architecture design professionals have commonly adapted computing technologies to improve the production efficiency and design communication between consultants. As a result, digital design production is rising and dominating within the architecture community hence design-build construction method projects are growing in the industries. However, most large scale contemporary commercial architecture is constructed through rigid construction practice that could result in safety and cost issues. Modulating the construction structure can be the central and necessity in the current and future industries in order to produce economical faster and safer construction process. As the new economic production strategies are now possible on site with use of modulated flexible molding, which is printed by three dimensional printing technologies. The purpose of this study is to investigate the efficiency and practicality of module construction as well as the potential impact to the existing industry. The research is emphasized on various digital prototypes and documentation of form, construction time, cost estimate, technical skill, and equipment requirement in the process of module construction. In addition, to test the hypothesis of module construction technique has the most advantage over traditional method that this

research will conclude with an exploration of prototype and the fabrication process data as an attempt to show the potential use of module construction in the industries.

45 Adam Reis, Architecture,

3D printing and the construction industry.

Abstract: The technology of 3D printing is exponentially evolving and emerging into the field of architecture. Expanding from plastic, the material libraries for printing have grown to include ceramics, sandstone, concrete, wood, steel, and precious metals such as brass, bronze, silver, and gold. It is now with the introduction of various structural materials, that 3D printing has become a serious topic in the built environment. The research will focus on the paradigm shift of the Architect back to the master builder. The potentials are in total fabrication of buildings and historical preservation/restoration. With the digital tools now available, architects can virtually construct and autonomously build anything within the volume limits of the particular 3D printer. With proper size or mobility, the potential for the realization of the digital file is limitless. This poses various questions of scale, implementation, and the future of the construction industry. For the first time in history it opens the flood gates of the building industry. The technology will be analyzed by researching the contemporary uses, and soon to be uses in projects that are currently gaining momentum.

46 Max Wagner, Architecture,

The urban implications of the autonomous vehicle: Proposing a pedestrian focused system within the current urban fabric of a city.

Abstract: Design guidelines for urban streets are based on the traditional cars that they serve. The grid of the city grows from these streets one building at a time. Cleveland in its current form is a typical post-industrial city which has maintained its fabric for many years, but whose street composition has undergone many iterations over time. Following in this tradition, and responding to the growing presence of autonomous vehicles of shapes yet to be determined, the next radical change in the urban street will be outlined here in this project. This succeeding step in urban street design will address issues in energy use and production, storm water management, tactile information processing, and visual and haptic feedback as ways to satisfy the current urban needs of the street and the upcoming needs of the autonomous car system. The immediate future of urban streets may see a fluid mixing of pedestrian and vehicular traffic, as well as informational, interactive, and productive services for the city and its citizens.

47 Joshua Kruszynski, Visual Communication Design,

Intelligent user interfaces.

Abstract: This research explores the application of machine learning and pattern recognition to biological, neurological, and behavioral signals, as a means of augmenting human-computer interaction, in an effort to reduce the stresses associated with prolonged use of technology and improve quality of life in the digital age. Primary research revolves around developing prototypes to explore: 1.) Gathering bio/neuro/behavioral signals using near-consumer-level devices. 2.) What interventions might help assuage cognitive strain, and what the efficacy of these interventions might be 3.) Control methods and parameters for the management of signal-gathering and the implementation of possible interventions. Secondary research investigates: • Issues arising from persistent connectivity • Issues arising from increased cognitive load • The role of visual communication in cognitive load. • The history and future of human-computer interaction • The implications of sub-conscious input on traditional concepts of usability.

48 Prerna Suri, Fashion,

Technology-enhanced adaptive clothing for the physically disabled.

Abstract: The purpose of this project is to employ "adaptive clothing" design principles and techniques for people with physical impairments who face difficulties in dressing themselves. The research design team developed a pair of professional trousers for a female disabled person to address her fit and design needs. The subject for this project suffers from Osteogenesis Imperfecta (OI) and has been struggling to find a perfect pair of trousers that she can wear to work. The design process started with a discussion meeting with the subject to understand her need and preferences in professional trousers. Patterns and prototypes were developed according to her body measurements. OptiTex patternmaking software was used to digitize the first prototype paper patterns and to modify them after the fitting session. A second prototype was developed with the revised pattern and confirmed fit. The elastic at the back waistband assisted to secure her trousers and reshaped trousers gave her comfort. These improved patterns could be reused to develop different style trousers for her. This project verified that well-customized clothing can be developed and easily worn by individuals with physical disabilities. Guidelines and pattern templates from this project could be modified for utilization in a non-profit design network.

49 Elizabeth Nelsen, Modern & Classical Language Studies,

CAT tools in the rapidly growing translation industry.

Abstract: Computer Assisted Translation (CAT) tools have become an invaluable resource in the translation industry. Over the last several decades CAT tools have transformed the translation approach by allowing the creation of translation memories to leverage new texts and by aiding in the creation of terminology corpuses. During my internship with iDISC Information Technologies in Barcelona, Spain, I learned to utilize a wide variety of CAT tools that I had not yet been exposed to at Kent State. In my presentation I will provide background information on what CAT tools are and how I learned to apply them to different texts I worked with during my internship.

50 Anjanette Barrick, Architecture,

Sprawl and public health: How to redesign suburban environments in order to decrease physical illnesses.

Abstract: Obesity and heart disease have been on a rapid rise throughout the last century. There is evidence to support that the layout of our cities contributes to this epidemic. The infrastructure of sprawl supports vehicular transportation and makes pedestrian/cycling unsafe and nearly impossible. The grid, or lack thereof, in suburbia is zoned so that uses are separated and the only way to get from use group A to use group B is by vehicular transportation. Studies have shown that higher vehicular use contributes to a decrease in air quality, an increased risk of vehicular-vehicular and vehicular-pedestrian accidents and can lead to a more sedentary life style. All of which greatly affect our overall health. Our current city plans and infrastructure are harming the human population. It is important that the issues be identified and measures be taken to improve the infrastructure in order to help with preventable health issues in cities.

Master's VIII

JUDGE(S): Dr. Jennifer Mapes, Dr. William Willoughby

51 Mykie Hrusovski, Architecture,

Self-imposed social isolationism in public urban environments.

Abstract: Among the multitude of societal factors that can foster exclusionary behaviors and self-imposed social isolation, the careless positioning and location of public space within complex urban environments may be a major contributing cause, unwillingly creating physical and psychological boundary conditions. This paper will provide a cursory overview of the various kinds of isolation prevalent in typical cities, the potential for urban form to cause or contribute to this set of behaviors, and finally provide an inventory of the design methodologies and practices that may prevent, reverse or reduce this social phenomenon. Modes of analysis will include the

inventorying and description of range of suspect interior and exterior public spaces that range in size, vintage, location, context, perceived quality and comfort and associated amenities. Observation of the potential contributing spatial elements of social isolation such as disjoined seating areas, elevation changes will be studied in conjunction with a field survey of random actual occupants and end-users. The objective of this research is to understand the extent in which loosely planned public space may negatively affect our broader social interactions and then to provide a basis for future implementation of more inclusive environments that encourage greater and more diverse public participation.

52 Mary Franciosa, Architecture,

Urban interventions and innovative urbanism ideas: Creative planning for streetscape comfort.

Abstract: Urban downtown areas have been adjusting their streetscape appeal to include public art interventions as a unique way to enhance recent innovative urbanism ideas. Since a city's street is the mode of connection between the fabric of a city, artistic tampering will garner a higher desire to provide comfort for a downtown dweller (Hall, 2012; Schwarz & Rugare, 2009; Sucher, 2003). Urban artistic interventions create a positive relationship between public space and private city regulations, transporting a city towards a more creative policy making agenda. The purpose of this study is to provide a framework for understanding how a city can create urban streetscape comfort through artistic interventions and whether public policies play a role in these creative outlets. This framework consists of four aspects of streetscape comfort which include: (a) user needs along a downtown street edge; (b) new urban revitalization through public involvement (c) appealing of artistic interventions and (d) effects of temporary/permanent placement. The proposed frameworks will provide a new outlook explaining why recent innovations in urbanism bring more life and comfort to an urban street. The paper will conclude to discuss a new language for downtown residents, city officials and urban planners to look towards public art interventions as comforting conditions for successful streetscape revival.

53 James Lennon, Architecture,

Urban density and public transportation: Cleveland.

Abstract: In an ever urbanizing world, with a growing focus placed on alternative transportation methods, this study is concerned with the development of Public Transportation and its effects on Urban Density. Previous research has provided a common threshold of population density required in order for public transportation to be successfully implemented, however every city operates differently. Cleveland provides an opportunity to study how increased availability of public transportation

influences the urban form, resulting in areas with a higher concentration of population density. By comparing statistical analysis of Cleveland's three main public transportation services (light rail, bus, and BRT) with population density statistics, a greater understanding of this complex web of development and transit can be understood. This, combined with a comparison to scholarly analysis on other cities, will provide insight into reasons for such development on a variety of scales. This study is expected to reveal the conclusion that access to public transportation will result in higher population density and increased ridership in the immediate surrounding area. This research is expected to help scholars, planners, architects, and urban designers make informed decisions on how to provide public services to specific areas in order to rejuvenate declining areas of a city, as well as create the opportunity to reduce automotive dependence.

54 Daniel Fox, Architecture,

The psychological transformation of the urban fabric through sociological obtrusions.

Abstract: Psychological effects from the sociological impact that the urban fabric has on society through visual interpretations can be analyzed and used to design a better urban environment for the public. This essentially narrows down to questioning how certain aesthetics of urban design alter our perception of a space and our behavior. Semantics within the language of architecture is an important element for the process of this research to better understand how certain façades can change the atmosphere of a place. However, it is also important that negative and positive psychological examples of architectural dialects within the urban fabric are analyzed to improve the overall lifestyle of the city. Evaluating the sociological characteristics of failed and successful examples of urban design will enable the research to have qualitative and quantitative means of analyzing each case study. Reasons why we might have the tendencies to gravitate towards or avoid certain areas will be determined based on their appearance; material, light and reflections, noise, and other factors of the urban environment such as area, height, and volume. Our understanding of the influence that sociology has on our individual psychologies within the urban fabric can provoke responsible design through increased sensitivity.

55 Caleb Heller, Architecture,

Designing healthy and sustainable schools: The impact of daylighting on student health and performance.

Abstract: With over 150 LEED certified schools, Ohio is the national leader in educating students in green environments, but the first research into the impact on students recently found no evidence of improved health or performance. Given the abundance of research indicating positive effects of green design on occupants, and the variability of design allowed under LEED, it's possible that specific design

strategies linked to improving health and performance have been underutilized in Ohio schools. An initial investigation into the design of Ohio schools identified the underutilization of daylighting as a possible reason overall student health and performance hasn't improved. Research has found daylighting to have a positive impact on student attendance, academic performance, concentration, behavior and body growth, but 63% of Ohio LEED schools weren't designed with daylighting in mind, and another 19% earned only 1 of 3 daylighting credits. In order to determine if daylighting is a significant factor, this research investigates change in Ohio student health and performance when traditional schools were replaced with daylit schools. Research suggests the greatest financial benefit of sustainable building comes from increased health and productivity, therefore it's important to develop an understanding of design leading to meaningful and measurable effects in schools.

56 Brian Karcher, Architecture,

The impact of urban design on the human's psychological and social behavior.

Abstract: Architecture's biggest challenge is designing for the user. Their behavior is the outcome of either good or bad design. Without the user, the architecture is meaningless. Therefore, when designing a new building, the implications of it needs to have a positive reaction from the user and surrounding environment. The research for this particular topic began with many challenging questions, only to be answered with sufficient sources and a correlational research method. The final results of my extensive research will include how architects have dealt with human behavior in the past and how it has responded to different types of designs. Such topics as comfort, environment, stress, etc. are all key words used in developing a psychological and social analysis and for which Architects can use to create a more positive atmosphere for future developments. Architecture affects people more than many may think. It is our job, as designers, to make sure the users are getting the most out of our building in the most positive way. My goal from this report is to encourage others to branch out into a different field of study which involve to human experience, lifestyles, etc.

57 Kiley Maas, Architecture,

Main street revival - Creating a sense of place through shared space.

Abstract: After a fire on March 22, 2014 destroyed half of its historic downtown, Garrettsville, Ohio now has the opportunity to envision a new and revived future through its rebuilding efforts. With a current lack of social and economic involvement in the downtown due to dependence on the vehicle, big-box stores, and sprawl, this project focuses on creating a sense of place through shared space that will evoke social and economic vitality. By creating a sense of place through shared space, the downtown becomes a place that people will want to live, work, shop, dine, and entertain as their daily needs are made convenient and met within walking distance. In

order to create a sense of place, people must be present in the downtown throughout the day to allow for social interactions, emotional connections, memories, and enjoyment. To accomplish this, the design will consist of a traffic pattern overhaul, increased boardwalk access, a redefining of space and its materials, and proposed buildings consisting of townhomes and mixed-use. The more people that are visible and present in the downtown, the more interaction and sense of community they create. By creating a downtown that is self-sustaining in a holistic manner, Garrettsville is able to sustain itself into the future.

58 Shannon Lesnak, Lifespan Development & Educational Sciences,

Activity-based intervention for early intervention in natural environments.

Abstract: Activity-based intervention is a research based method of intervention with positive effects for young children with developmental delays or disabilities. Caregivers follow the child's interest and embed developmental goals during daily routines and activities to provide repeated practice with functional skills. Naturally occurring motivators are offered by the caregiver before and after the targeted skill. ABI is a comprehensive intervention that can be used for multiple developmental domains. The participants of this study are a one year old child with gross motor delays and his mother. The setting is in the child's natural environment of his home. The research method is a single subject AB design with baseline and intervention conditions. The independent variable of the study is activity- based intervention. The dependent variable is the child's increased participation in daily routines with his family due to his gains in gross motor ability. The preliminary results of this study suggest it will align with past research that shows ABI is an effective intervention for increasing developmental skills for children with disabilities. The implications are that following the child's interest and embedding goals during daily routines will allow the ongoing practice necessary for children with disabilities to achieve functional skills.

Master's IX

JUDGE(S): Dr. Ching-I Chen, Dr. Sara Raven

59 Yolanda Mahoney, Lifespan Development & Educational Sciences,

The effect of joint attention on play skills in children with autism.

Abstract: In the field of Early Intervention a significant challenge for families and professionals is supporting children with autism in their ability to communicate and interact in their social environmrnt. Joint attention plays a critical role in the development of effective communication and social interactions. A single subject research design with baseline and intervention was used. Synthesis of preexisting research on the effects of joint atteniton (IV) on play skills (DV) of children with autism is completed. A coaching interaction style is used to support parents in

developing joint attenion skills with their 2 year old, these interactions occur once per week at least 60 minutes per session. Preliminary data supports that when ealry interventon professionals coach parents on implementing interaction skills this aids in developing joint atteniton, thier overall skills in communication and social intraction increase. The implication of these results on future learning of children with autism is that increasing joint atteniton will support positive results on future learning in school. Children with autism face many challenges in their daily world, supporting parents and caregivers in developing joint attenion skills make a significant impact on future success in all areas of life

60 Corey Raleigh, Lifespan Development & Educational Sciences,

Development of a curriculum enhancing character development for children in generational poverty.

Abstract: The purpose of this project is to develop a seven session curriculum targeting seven key character traits (Peterson & Seligman, 2004) and family support by focusing on selected relevant developmental assets and the concept of sparks among children in a low-income urban environment. The introductory session will focus on spark identification or zest within the youth themselves. The final session will foster a connection between parents/caregivers and the youth and will heighten the family's understanding of their youth's spark. The five sessions in between will address the character traits of grit, self-control, social intelligence, gratitude, optimism, and curiosity School-aged children from ages seven to ten will be served by this curriculum. This curriculum will be designed to be implemented in conjunction with an already established after-school program serving children in poverty. There will be seven two hour sessions once a week. There is a strong emphasis on fun activities and open discussion. There will also be a pre and post-test for each session to ensure quality and effectiveness in the program.

61 Kaitlyn Warren, Teaching, Learning, & Curriculum,

Coaching caregivers to implement music therapy as a tool to improve expressive language skills in young children.

Abstract: Infants receive auditory information from their caregivers and surrounding environments before they are born. Sounds are their first interactions with the outside world. Since newborns are unable to see more than about a foot away, many of their earliest social interactions and attempts at communication occur through sound. Interactions between infants and caregivers are critical in establishing emotional bonds necessary for influencing positive social, emotional, and communicative development. Infants have a preference for familiar human voices and are especially drawn to the varying pitches and rhythms that accompany song. Various studies have shown that music therapy increases the emotional connection and attachment between caregiver

and child. However, there is little empirical evidence supporting music therapy as a strategy to enhance expressive communication. This study follows one child over the course of approximately 5 months and monitors the progress of her expressive language through the use of parent-implemented music therapy. By teaching her caregiver simple ways to incorporate music into daily routines it is estimated that she will improve her ability to express her wants and needs through increased meaningful gestures, vocalizations, or speech.

62 Lolagul Raimbekova, Teaching, Learning, & Curriculum,

Development of early childhood education and care in Tajikistan: Hope for accessibility, affordability, and quality in early years education.

Abstract: This presentation's aim is to share the work from the Early Child Education and Care program in Tajikistan, Central Asia, including on-going efforts to ensure accessibility, affordability, and quality in kindergarten. Historically, early education opportunities in Tajikistan are severely limited as only nine per cent of children attend pre-school nationwide (UNICEF 2010). Children enter grade one at age seven, and most arrive without the cognitive and social skills critical for successful participation in primary education. Language skills, poverty, and mountainous geography, are on-going challenges. Considering all these needs, the early childhood development and education (ECDE) has become a priority in the past ten years in the state policy; it is seen as an important pre-requisite of successful socialization and quality education. Beside increasing access to alternative ECDE program (as supported by the Aga Khan Foundation and UNICEF) that runs along with the public (Soviet type) kindergarten for children from low income families, Tajikistan is introducing many changes into its legislation, curricula and ethos of pre-school institutions. The presenter will share experiences of ECD training initiatives in two areas of Tajikistan in 2014 (Dushanbe and GBAO) with the support of the EHHS Faculty member to complement the country's ECD goals.

63 Daniel Smith, Sociology,

Merely players: Reviewing literature on video game careers and parental career support.

Abstract: The audience for professional video games as a sport has grown dramatically in the last few years, with prize pools in the millions, ratings rivaling traditional sporting championships, and exposure on national television. It is in this environment that this presentation examines the existing literature on how video game entrepreneurs discuss their profession, as well as the impact of familial support structures and how these may play a role in that discourse. The aim is to provide a base from which to conduct research on how professional video game players talk about the sport as a career and what resources and support they receive from their

families. This research will provide insight into how to improve career-counseling support through establishing best practices and increasing knowledge and resources for counselors to employ when talking to potential professional gamers and their families.

64 Phyllis Jadosh, Lifespan Development & Educational Sciences,

The effects of parent implemented communication intervention to foster positive adult-child interactions and child communication at home setting.

Abstract: The value of collaborating with families using a family-centered approach within natural environments can promote higher levels of frequent parent-child interactions encouraging the child's participation in learning language. This study investigates how the quality of the parent-child relationship and the frequency of daily parent-child interactions, during routine activities, influence a child's language output. The study looked at how family risk factors may be strong influencers that could cause developmental language delays in children. Single subject, AB designs were implemented across families to examine the parent implementation of the evidence-based and recommended strategies in the home setting. Set types of daily routine activities in the home were observed through short-videotaped sessions and both adult delivery of the communication promoting strategies and child expressive communication. Results show that the parents learned to use strategies across daily routines in the natural environment and adult child interactions improved over time. Overall, higher quality parent-child interactions can be associated with increased opportunities to develop language. Parent-child activities such as talking, playing, and reading with children also had higher positive implications in language development. Further research to determine key variables within family settings that identify prevention education opportunities would increase levels of success in language.

Master's X

JUDGE(S): Dr. Insook Kim, Dr. Yin Zhang

65 Elizabeth Lattime, Teaching, Learning, & Curriculum,

Effective coaching. Empowering families.

Abstract: Introduction Caregivers of children with disabilities benefit from early intervention coaching which includes both feedback and reflection from the coach (i.e. early interventionist). Practitioners must critically examine the behaviors and interactions within the caregiver-child relationship and understand the family dynamics. Teaching caregivers how to implement play that is motivating to children and connected to their intervention plans has been done effectively (VanDerHeyden, Snyder, Smith, Sevin, & Longwell, 2005). Does coaching increase the caregiver's use of play interactions with the child? Does the caregiver's use of play interactions

increase the level of the child's engagement? Method This research study is an AB single subject research design that examines the effects of video supported coaching, including performance feedback, and ongoing caregiver reflection (independent variable) on the amount of child engagement and an increased amount of positive reflection provided by the caregiver (dependent variables). Results and Discussion The impact of child engagement, increased communication, and performance feedback are all pivotal components to guiding caregivers and children toward increased empowerment and engagement (Marturana & Woods, 2012; Moore, Burton, & Chironis, 2014; VanDerHeyden et al, 2005). It is critical for early interventionists to implement effective strategies for families to reach developmental achievements.

66 Bridget Tompkins, Lifespan Development & Educational Sciences,

Coaching caregivers on the use of a play-based communication strategy to enhance the social skills of young children with communication delays.

Abstract: This study will evaluate the effectiveness of Prelinguistic Milieu Teaching (PMT) for a 12-month-old child with a communication delay. A single subject research method will be used with an AB (baseline and intervention) design. The focus of this study is on the use of PMT to promote an increase in gestures and vocalizations as means of communication. Caregivers will be coached on using PMT as a play-based strategy to use during their daily routines. Caregivers will be coached on play-based strategies that include arranging the environment, following the child's lead, waiting for child initiation, using prompts and modeling to promote child communication. The intervention phase will involve coaching the parent to implement PMT strategies with the child. Preliminary results will show an increase in child communication in the form of vocalization. Evidence supports the use of PMT with children of all ages who are non-verbal. Using PMT with very young children is not as well documented. The proposed study is unique due to the child being born at 29 weeks gestation. It is hypothesized that this study will support the benefits of very young child born prematurely.

67 Ryan Buck, Teaching, Learning, & Curriculum,

The effects of naturalistic communication promoting strategies on a child's expressive language at a home setting.

Abstract: The purpose of this study is to determine the effect of evidence based and naturalistic communication promoting strategies on a child's expressive language in their home setting. Research states that naturalistic communication interventions are effective for fostering child communication and positive adult child interactions implemented within the context of children's daily activities and routines. Parents will receive coaching and support to implement intervention strategies such as: modeling, labeling, open ended questions, environmental arrangement, positive feedback, and

expansions. Child expressive communication will be targeted via single subject, AB design, with a baseline and intervention. The results will indicate that the parent training increases the parent use of the effective strategies, and child expressive communication. The results align with past research in that interest-based child learning and use of naturally occurring activities in the child's environment will impact the child in a way that will positively affect a child's expressive language communication.

68 Jenna Dodson, Lifespan Development & Educational Sciences,

The effects of responsive teaching practices, on communication through parent to child interactions.

Abstract: For the Graduate Research Symposium, I am proposing research findings based off of the Early Intervention, Evidence Based Practice, known as Responsive Teaching. Responsive Teaching is a, comprehensive parent-mediated intervention curriculum for children from birth to 6 years of age who have, or are at-risk for, a developmental delay. The research and regular observations involved in this project are targeted towards the use of Responsive Teaching strategies and their effects on verbal and nonverbal communication within parent to child interactions. The research used will be based off of single-subject, multiple baseline studies, and ongoing observations with families of the parent to child interactions. The purpose of this proposal is to show the importance of parent interaction/involvement with their children when it comes to the development of social engagement and communication pathways as their child grows. There are five major strategies embedded into Responsive Teaching, they are as follows; reciprocity, contingency, affect, match, and shared control. Whether the target area of interaction is either verbal or nonverbal, the findings from the research on this Evidence Based Practice, proves it to be effective in strengthening and encouraging growth and development in all aspects of social engagement and communication.

69 Maryam Hima, Lifespan Development & Educational Sciences,

The effect of activity choice and social and primary reinforcement on sitting on floor behavior.

Abstract: This study was conducted on a first grade student in the general education classroom who demonstrated several disruptive behaviors during floor meetings. an A-B-A-B single subject research design was conducted to examine the effect of activity choice and social reinforcement on sitting on floor behavior. A functional relationship was demonstrated in this study because 95.2% of the criteria evaluated were positive.

70 Qiong Tao, Fashion,

Clothing attributes that influence purchase intention.

Abstract: The purpose of this study is to examine the effect of clothing attributes of the products that were created for the school-sponsored store; and their influences on purchase intention. Although previous studies have examined the relationships between clothing attributes and purchase intention, no studies have investigated specific fashion products that were developed for a particular store and evaluated by potential consumers. We hypothesized among clothing attributes (color, comfort, durability, ease of care, fabric, fit, general appearance, style/fashion), color, general appearance, and style/fashion will have positive influence on purchase intention. The survey asked each of the ten garment's characteristics in a 10-point scale, ranging from 1 to 10. Then participants separately indicated product worth and purchase intention measured by scales with 10 different amounts ranging from "less than $20" to "more than $200". A total of 136 fashion school freshmen and sophomores with 90 percent female, and 60 percent majoring in Fashion merchandising participated in this survey. Data was analyzed in SPSS using simultaneous multiple regression method. As we hypothesized, for most of the garments, general appearance and style/fashion were the most significant influencer. Ease of care and fabric were insignificant influencers on two of the garments.

Master's XI

JUDGE(S): Dr. Jeanne Smith, Ms. Julie Gabella**,** Dr. Kathryn Kerns

71 Yan Wang, Journalism & Mass Communication,

Dialogs with Chinese audiences through Sina Weibo: Case studies of Chinese and American celebrity social media practices.

Abstract: This project is designed to help American celebrities connect with Chinese audiences through Sina Weibo, a popular microblogging website in China. The research consists of case studies of celebrity practices on Sina Weibo with the examination of Dialogic Theory (Kent & Tailor, 2002) and cultural dimensions (Hofstede, Hofstede, & Minkov, 2010). Finally, examples of dialogic and non-dialogic practices and those embodying cultural dimensions are concluded from the cases. Aimed at increasing celebrities' brand popularity and strengthening their relationships with Chinese audiences, the handbook offers guidance for American celebrities who wish to understand Sina Weibo as a communication platform and connect with its users with culturally sensitive dialogs rather than using it as a platform for broadcasting messages.

72 Yuandong Chen, Journalism & Mass Communication,

Possible factors that might change Chinese people's attitudes towards media.

Abstract: Liu and Bates state that "comparing people's attitudes towards media in America and China, ... media credibility ratings in China are much higher than those in America" (2009, p.308). However, the fact that Chinese media serve for government is also well known. So I want to know what are some factors that might influence Chinese people's attitudes towards media. The possible factors may include, but not limited to, what role people think media should play, how people evaluate media, people's national identities (Liu & Bates, 2009), critical thinking skills, and multiple media channels.

73 Rachel Defranco, Psychological Sciences,

Witness uncertainty and its effects on jurors' beliefs.

Abstract: Many studies have shown that jurors are heavily swayed by confident witnesses, even though confidence is not always correlated with accuracy (Lindsay, Wells & O'Connor, 1989; Brewer & Burke, 2002; Whitley & Greenberg, 1986). Whereas previous studies have drawn comparisons between jurors' belief in highly confident and uncertain witnesses, the present study assessed whether mock jurors were sensitive to variations in certainty within a single witness. A second question addressed by the present study was whether mock jurors would be more sensitive to some indicators of uncertainty (i.e, overt verbal expressions of doubt) than others (having to be prompted repeatedly to respond). The results showed that participant/jurors' belief in the witness's testimony was highly sensitive to both indicators of uncertainty when judgments were made immediately, but not if they provided belief judgments after one week. The results thus show that memory for witness uncertainty is very short-lived.

74 Daniel Armagno, Architecture,

The psychological effect of artificial light: Cognitive performance impact in a work environment.

Abstract: Today's work environments have a range of daylighting restrictions, increasing dependence of artificial light. The lighting guidelines/code in architecture, for artificial lighting are based on safety requirements and what has worked in the past (learning from Sick Building Syndrome). However, these guidelines have not studied the psychological effects of light colors, intensities, and types that might have on a user. Investigating current "design practices of artificial light" and comparing them with "psychologists perspectives" will bridge the current knowledge gaps. A sample of 35 patients, 10 being control subjects (<40 years)will be recruited via questionnaire given on the Kent State University campus. The two groups will be compared for the

effect of artificial light on cognitive disturbances. We will be looking at productivity in a workplace being impacted by light color variations, light intensities, and light types. The method will show a defined comfort zone for productivity versus boredom, anxiety, or worry. Daylighting is one of the best ways to impact brain cognition in a positive manner. In the Ohio climates, we can be impacted by Seasonal Affective Disorder. The results will emphasize the serious role of artificial light for cognitive brain responses in a work environment. This will shine light on the knowledge gap between the psychologists perspectives and designers of artificial light.

75 Tim Magner, Architecture,

The effects of varied lighting styles on patrons' experiences at bars: A case study of four environments.

Abstract: A case study of four bars in to be undertaken. The methods of lighting will be documented, including light levels, color temperature, and saturation. Patrons will also be invited to fill out anonymous survey cards that document their mood and general feelings of the space. This subjective data will be interpreted alongside the collected lighting data to understand the correlation between lighting and experience. The psychology of lighting and color on mood is also to be researched and included in the resulting analysis. The four spaces will be selected so as to minimize significant variables that may impact experience. By selecting spaces with a similar clientele, capacity, and price point this study intends to limit the influence of outside factors and gather data only with regards to lighting and experience.

76 Sandeep Kumar Gudipati, Digital Science,

Leadership makes a difference.

Abstract: The Student Organization Leadership Makes a Difference creates a wonderful opportunity for both domestic and international students to enhance their leadership cross-cultural experience through team building, participating in workshops, attending events, and volunteering, as well as exchanging experiences which will create a positive impact in students' academic, professional and social lives. Leadership Makes a Difference aims to develop the leadership potential of youth through experimental learning, volunteer experiences and professional events. Leadership Makes a Difference aims to serve students through providing various leadership conferences, workshops, and cultural fests. The ultimate goal of the organization is to empower the individuals in regards with their leadership talents while providing a profound platform for students to network.

77 Anna Wise, Psychological Sciences,

Family social support protects against suicide behavior and ideation in a diverse sample of LGBT adolescents.

Abstract: Suicide is the third highest cause of adolescent deaths in the U.S. (CDC, 2005), and adolescent sexual minorities are at an increased risk for suicide attempts and suicidal ideation compared to their heterosexual peers (Kann et al., 2011). Several risk factors for past suicide attempts, including low social support, have been identified in LGBT youth samples (Liu & Mustanski, 2012). Evidence also suggests that perceived social support from family and friends is a protective factor against suicide behavior in transgender adults (Moody & Smith, 2013). Participants answered self-report questionnaires about suicidal ideation, suicide attempts, and perceived social support from family, friends, and significant others. Our sample (N=102) consisted of 68 males, 82.4% African-American, mean age 19.5 (SD = 2.23). Logistic regression analyses indicated that adolescents with higher levels of family social support had significantly lower odds of having past suicide attempts (B= -0.12, $p<.005$) and current suicidal ideation (B= -0.10, $p<.01$). Social support from friends and significant others was not significantly associated with suicide attempts or ideation. Social support from family may act as a protective factor against suicidal ideation and suicide attempts in LGBT racial minority adolescents.

Master's XII

JUDGE(S): Ms. Amanda Burke, Dr. Yafen Wang

78 Lisa Manderino, Psychological Sciences,

Traditional cognitive deficiencies predict impaired performance on an emotion recognition task in bariatric surgery candidates.

Abstract: Deficits in traditional cognitive domains (e.g. attention, memory, etc.) are prevalent in obese persons, but it is unclear if such deficits extend to social cognition. The present study examined whether impairment in traditional domains of cognition predicted deficits in social cognition, as measured by an emotion recognition task, in bariatric surgery candidates. 116 bariatric surgery candidates (avg age = 43.62 ± 11.03; 81% female) completed the computerized Integneuro neuropsychological test battery. In addition to traditional cognitive domains, the Integneuro also assesses emotion recognition. This task presents 48 faces (8 different individuals depicting neutral, happiness, fear, sadness, anger, and disgust) and participants must choose the correct verbal label from the six expression options. Correct responses and speed of correct responses served as primary dependent variables. Stepwise multiple regression analyses revealed that age, Maze Errors, and hypertension predicted accuracy (Adjusted $R2 = .22$, $F(3, 111) = 11.86$, $p<.001$), while age, Switching of Attention-Digits, and Long Delay Recall predicted reaction time (Adjusted $R2 = .26$, $F(3, 111) =$

13.00, p<.001). Several aspects of cognition predicted emotion recognition performance, suggesting a link between traditional cognitive impairment and social cognitive impairment in obese persons. The mechanism(s) of this relationship is unclear and requires further study, as social functioning may relate to bariatric surgery outcome.

79 Elizabeth Ruzicka, Psychological Sciences,

Examining the relation between weight control strategies and eating disorder symptomatologyy in first year college females.

Abstract: The transition to college is a time when adolescents are at heightened risk for weight gain and females are at increased risk for developing an eating disorder. Little is known about whether adolescents engaging in certain kinds of weight control strategies may be at risk for eating disorder symptoms. The present study investigated the association between weight control strategies and eating disorder symptomatology among female college freshmen. 69 female freshmen completed baseline measures assessing eating disorder symptomatology and weight control strategies in their first two months of college. Height and weight were measured objectively, and was used to calculate BMI. Participants' eating disorder symptomatology was assessed using the Eating Disorder Examination Questionnaire (EDE-Q) total score. Weight control strategies were measured using the Weight Control Strategies Scale (WCSS) total score. Findings suggested that, after controlling for current BMI, scores on the WCSS predicted scores on the EDE-Q (β=0.576; $p<0.001$; $R2=0.60$). In female adolescents making the transition to college, use of weight control strategies predicts eating disorder symptomatology. Given traditional weight gain throughout the first year of college it is important to monitor female adolescents to ensure that their weight control strategies do not lead to the development of an eating disorder.

80 Maria Teran-Somohano, Modern & Classical Language Studies,

Translating health promotion materials for true patient-centered care.

Abstract: Health promotion messages can play an essential role in reducing risk and death rates among diverse populations. There is a large body of literature on the general theory and methods of developing health promotion messages and materials; however there is scarcely any information on effective approaches for translating these materials from English into other languages for diverse populations. The purpose of this poster is to provide guidance on how to assure that translations of these health promotion materials be both linguistically and culturally adequate and, therefore, truly patient-centered. The poster focuses on translations into Spanish, catering to the Hispanic population, which according to the U.S. Census Bureau is the nation's largest ethnic or race minority in the United States. However, the recommendations and

guidelines can also be useful for translators and health providers serving other diverse populations.

81 Jessica Sanata, Nursing,

Osteoporosis prevention knowledge in transgender individuals.

Abstract: Purpose: To describe knowledge of osteoporosis prevention in transgender individuals (TI). Background: The health care needs of TI are many and complex. Osteoporosis a serious, debilitating age related health care concern. TI may have greater risk for osteoporosis than the general population due to their high risk lifestyle behaviors including, smoking, substance use, decreased dietary calcium intake, sedentary lifestyle, and often unmonitored cross-sex hormone use. Despite TI risk factors, the research is sparse in addressing bone health and osteoporosis prevention among TI. Sample/Method: This is a mixed methods descriptive study. Thirty-one participants age 30 and older completed a survey addressing their perceived health beliefs through use of the Osteoporosis Knowledge Test. Results: Knowledge was analyzed by assessing percentage of knowledge questions answered correctly. Percentage score is indicated by a letter grade with A > 90% to 100% (n=1), B is > 80% and < 90% (n=0), C is >70% and < 80% (n=3), D is > 60% and < 70% (n=2), F is < 60% (n=25). The TI performed poorly on the knowledge measure with 81% of participants failing the test. Conclusion: This study indicates TI need for osteoporosis education.

82 Christine Scaglione, Architecture,

Walkable neighborhoods: A development of walkability criteria and an analysis of a suburban community.

Abstract: With the new trend towards walkable communities, several agencies have come up with standards to achieve walkability, such as the U.S Green Building Council, Natural Resources Defense Council, Congress for the New Urbanism, and the U.S. Department of Transportation, yet there is no consensus of universal criteria defining walkability of neighborhoods. Many suburban areas in the United States need to improve walkability because pedestrian-friendly walkable neighborhoods are important in order to reduce car dependability, create a sense of community and influence increased physical activity to promote health (Leslie, 2004; Owen, 2004). The purpose of this study is to identify standards that can contribute to a community's walkability such as residential density, land-use mix diversity, building orientation, sidewalk width, traffic speed and safety, street connectivity, lighting, proximity to amenities, aesthetics, and safety (Leslie, 2004; Owen, 2004; Van Dyck, 2008). These standards will then be tested against five neighborhoods in the city of Cuyahoga Falls, Ohio to diagnose whether they are walkable and to suggest strategies to improve walkability. The outcome will be presented in the graduate symposium.

83 Apoorva Juneja, Architecture,

Energy and health implications of physical attributes of the community: A study of Slavic Village, Cleveland, Ohio.

Abstract: This study investigates the relationship of physical attributes of the built environment with space conditioning energy and its health impacts in the most socio-economically deprived neighborhood of Cleveland. Although Cleveland, Ohio is in a moderate climatic zone, the implications of increasing lot vacancy, depleted physical conditions of the buildings, and increased sensitivity of the urban dwellers to the changing climatic conditions is a priority in the city's Climate Action Plan. The physical attributes of the community will be documented by combining satellite imagery and on-site visual surveys to collect envelope, lighting, and thermal conditioning systems associated with identified building typologies. Employing an energy simulation approach, this study will investigate the energy implications of the physical attributes of the community. The indoor thermal conditions of these buildings will be correlated with heat stress and related respiratory stress on the occupants. This study will contribute toward the development of location-specific planning strategies for the city of Cleveland.

84 Pavan Sarisa, Digital Science,

Meditation.

Abstract: Meditation is silencing the incessant chatter of the restless mind for that ... we ... begin ... with ... the ... breath. The process of meditation is simple- Close your eyes and be with your natural breath. Meditation silences the restless waves of mind, thereby preserving soul energy leading to good health, peace of mind and wisdom of life. Meditation done inside a pyramid, or underneath a pyramid, is called as Pyramid Meditation.

85 Shorog Al Omair, Biomedical Sciences,

Splicing regulation of major VEGF isoforms.

Abstract: VEGF is a key factor in promoting tumor development and progression. VEGF can be alternatively spliced generating several isoforms with distinct biological characteristics. VEGF121 and VEGF165 are the most predominant in cancer. Little is known about the regulation of VEGF major splice variants. Recently, WT1 was found to regulate the process of blood cell early development (hematopoiesis) by controlling the ratio of VEGF121 to VEGF165. This suggests a potentially significant contribution of WT1 to hematologic malignancies by controlling VEGF splicing. The goal of our research is to determine the effect of potential splicing regulators on the VEGF splice isoforms in leukemia. Using human leukemia cells, we have examined the effect of hypoxia and WT1 expression on VEGF splicing. Our hypothesis is that in

leukemia cells, hypoxia and WT1 control alternative splicing of VEGF. Using quantitative real time PCR (qRTPCR) assays we measured VEGF isoforms in leukemia cells cultured in conditions of low oxygen (hypoxia) and in cells engineered to express high WT1 levels. We have observed that hypoxia, unlike WT1, induced the splicing of VEGF favoring VEGF121. Overall, this work identifies the control mechanisms of the biologically distinct and clinically significant major VEGF isoforms in the context of leukemia.

Master's XIII

JUDGE(S): Dr. John McDaniel, Mr. Varun Kumar

86 Lydia Heemstra, Biological Sciences,

Melatonin and Cortisol in night shift work.

Abstract: In healthy humans, levels of melatonin, known as the "sleep hormone," and cortisol, called the "stress hormone," rise and fall every 24 hours in a circadian rhythm. Shift work is defined as extending beyond an 8-hour work day. Besides disrupting sleep, shift work is associated with increased risk of heart attack, stroke, obesity, diabetes, mood disorders, infertility, and several cancers. Many nurses work a rotating schedule, switching between day and night shifts. While melatonin and cortisol have been studied in longer term shift work, this study is the first to measure these hormones after only one night shift. After training, nurses collected their own saliva samples before sleep and as soon as they woke up for both day and night shifts. Samples were analyzed by enzyme immunoassay. For female nurses in this study, cortisol rhythm amplitude decreased significantly from day to night shifts. For both female and male nurses, melatonin did not change significantly but a trend was apparent. The decreased cortisol amplitude and the trend toward decreased melatonin amplitude are both consistent with published studies of multiple night shifts. This study's results suggest that working just one night shift may also be hazardous to health.

87 Jessica Krieger, Biomedical Sciences,

The inhibitory effects of Fibrosis on muscle regeneration in a self-assembled tissue engineered model of skeletal muscle.

Abstract: In degenerative muscle diseases and trauma, healing mechanisms trigger formation of fibrotic tissue, increasing the extracellular matrix stiffness in the cellular macro- and microenvironment. Through a mechanosensory-based mechanism, skeletal muscle regeneration paradigms are precluded by scarring, causing detrimental effects on overall tissue contractility and function. Fibrosis can be simulated in vitro through upregulation of α-smooth muscle actin, TGF-β1, and type-I collagen genes. To study the effect of fibrosis on myoblast gene expression, we have employed an in vitro

three-dimensional, self-assembled, scaffoldless tissue engineered skeletal muscle construct, consisting of mouse myoblasts and primary human neonatal fibroblasts, prepared in a non-adherent annular agarose ring mold. Using this system, we tested the hypothesis that a tissue engineered construct containing fibrotic fibroblasts negatively regulates the self-renewal, and therefore the regenerative capacity, of myoblasts. We found that fibrotic 3D culture systems inhibited regeneration programs, while 2D culture systems, lacking the mechanical properties of 3D models, preserved the self-renewal capacity of myoblasts. This data indicates that gene expression paradigms in 2D culture systems are not representative of those occurring in a 3D microenvironment. Additionally, this tissue construct design provides a rapid and robust system with which to study ex vivo multi-cellular interactions.

88 Maeson Latsko, Psychological Sciences,

Neuroendocrine and gene expression changes are associated with different phenotypic responses to juvenile social defeat.

Abstract: Following trauma, 15-20% of subjects develop stress-related pathologies. Stress during periadolescence can exacerbate symptoms of adult psychopathologies. In the current study, we use acute defeat in mice to investigate effects of social stress on subsequent social behavior. Defeats involve exposing juvenile male C57Bl6/J mice to aggressive CD-1 mice. For each round, mice receive 5 minutes of physical contact followed by 55 minutes of sensory contact. Mice are exposed to eight rounds over two consecutive days. One day and thirty days after social defeat, mice are tested for social interaction. In prior studies, adult social defeat results in two phenotypic responses in mice; some mice display high interaction levels (resistance) and others display low interaction levels (susceptibility). Following juvenile social defeat, mice are initially resistant. However, when tested as adults, two phenotypic responses emerge; latent susceptibility or stable resistance. To investigate the development of these phenotypes, we examined neuroendocrine responses to defeat across the life-span. Stable resistant mice display elevated corticosterone following juvenile social interaction compared to susceptible mice. Stable resistant mice also display reduced testosterone as adults compared to latent susceptible mice. Future experiments will analyze gene expression changes in glucocorticoid and corticotropin releasing hormone receptors using in situ hybridization.

89 Karin Maria Nylocks, Psychological Sciences,

Influence of the BDNF Val66Met polymorphism on autonomic nervous system activation to emotional stimuli.

Abstract: Mood and anxiety disorders are prevalent (Kessler, 2005) and linked to cardiac-vagal control (i.e. RSA) (Porges, 2009). BDNF impacts neural plasticity/growth (Brunoni et al, 2008). A single nucleotide polymorphism in the

BDNF gene (Val66Met) may influence emotion regulation (ER). Higher RSA is associated with improved stress response and better ER (Kreibig, 2010). Literature on Val66Met shows complex interactions between genotype and risk for psychopathology, with risks in both Met and Val alleles (Lotrich et al, 2013; Egan et al, 2003). Participants viewed emotionally evocative videos that encourage shifts in emotional responses. RSA was monitored using MindWareBionet 2-slot System. Saliva was collected and genotyped using standard PCR and RFLP analysis. Our sample (N=102) consisted of 61 females, 80.4% Caucasian, mean age 20.6 (SD=5.33). A repeated measures ANOVA showed a within-subjects effect of genotype $F(1,94)=5.29$, $p=.02$, $hp2 =.05$. Val homozygotes showed more RSA activity to negative emotional stimuli (M=6.49,SE=.05), relative to Met carriers (M=6.3,SE=.05). As negative content of stimuli decrease, Val homozygotes showed a decrease in RSA activity (M=6.4, SE=.05) whereas Met carriers showed the opposite pattern (M=6.41, SE=.07). Greater regulatory processing and flexibility in Val homozygotes suggests protective effects of this allele. These findings are novel and further research is needed.

90 Adam Ulmen, Psychological Sciences,

Is anisomycin-induced amnesia for reconsolidation of auditory fear conditioning state-dependent?

Abstract: Anisomycin, a protein synthesis inhibitor, has been used to impair the reconsolidation of auditory fear conditioning in rats when infused into the amygdala (Nader et al., 2000). Given this impairment, it is a reasonable claim that auditory fear conditioning depends on protein synthesis. Despite the power of that work, it remains possible that we may be able to restore that auditory fear memory by providing the drug treatment a second time prior to testing to assess the presence of a "state-dependent" memory. State-dependent memory occurs when a subject is under the influence of some kind of "state" (drugs etc...) when learning, storing, or re-storing a memory. The result is memory impairment at subsequent testing. However when a memory impairment is state-dependent, the re-administration of the drug prior to testing alleviates the amnesia and reveals that the memory is indeed intact, just inaccessible when not in the drug state. The aim of the current work is to alleviate anisomycin-induced amnesia and demonstrate that auditory fear conditioning does not require new protein synthesis in the amygdala.

91 Julia Yeakley, Geology,

Influence of salt tectonics on seafloor morphology from Algeria to Sardinia.

Abstract: This research evaluates distribution of evaporites and the influence of salt tectonics on seafloor morphology along a proposed pipeline route between Algeria and Sardinia, utilizing marine geophysical and geotechnical data. Emphasis is on

quantitatively determining rates of sediment displacements caused by salt movement and evaluating associated geomorphic features on the seafloor. Distribution of salt in the central Mediterranean has not been accurately mapped and stresses causing diapiric structures to form are not well defined. This research attempts to identify and quantify seafloor deformation related to salt tectonics on the basis of morphology, stratigraphy, and sedimentology. Quantitative analysis of sedimentology rates and structures are based on interpretation of seismic reflection sub-bottom profiles, together with results of age-dated core samples. Tectonic identification and analysis of faults, folds, domes, depressions and seafloor features such as pockmarks and slope failures are made with evaluation of influence of salt domes on seafloor morphology, slopes, and how slope failures can relate to salt movement. Salt-related structures are identified and interpreted in terms of geometry, distribution and associated structural features, showing relationship to seafloor deformation. Additional research should lead to determining the amount, timing and style of deformation with respect to salt tectonics within the study area.

Master's XIV

JUDGE(S):

92 S. Lindsay Poluga, Geology,

Rock mass characterization and stability evaluation of Mount Rushmore National Memorial, Keystone, South Dakota.

Abstract: The structural integrity of the Mount Rushmore National Memorial (MORU) sculptures is of the utmost importance. The National Park Service is interested in the effect of vibrations on the sculptures associated with Fourth of July fireworks. The impact of vibrations on the sculptures will most likely depend on the response of discontinuities traversing the memorial as discontinuities are areas of weakness where movements of the rock blocks are most likely to occur. This research focuses on the following four objectives: (1) rock mass characterization of MORU based on different aspects of the discontinuities using both the Rock Mass Rating and Q-system, (2) determine the engineering properties of the rock at MORU, (3) evaluate the potential modes of slope failure at the memorial, and determine the factor of safety of the possible failures, and (4) conduct a preliminary evaluation of the response of the sculptures in terms of any displacements along the discontinuities caused by fireworks activity. The results of this study will provide information on the long term stability of Mount Rushmore and will aid in the preservation of this national landmark.

93 Andrew Gerwitz, Geology,

Changes in limb bone size of Florida Odocoileus *virginianus (Mammalia:Cervidae) from the early Pleistocene to Holocene.*

Abstract: Abundant fossils of Odocoileus virginianus from Florida provide an opportunity to study bone size changes between succeeding populations of a mammal species chronologically thru time. We hypothesize that adult limb bone size in Florida O. virginianus has changed thru the Pleistocene (PLE) to Holocene (HOL). Mid-diaphyseal circumference (MDC) and length of 291 limb bones were measured from multiple fossil localities and modern deer specimens from Florida. A decreasing trend in MDC was observed chronologically for multiple limb bones from central Florida populations, but these changes were only significant for two of six elements from central Florida. No significant differences were observed when comparing other geographic localities thru time. Modern Central populations had significantly larger MDC in some limb elements than those from Modern Southern and Northern populations. These differences in MDC could be a result of changes in growth which may reflect the availability and nutritional content of food resources within environments. Even so, relating diet and associated environmental conditions as a sole factor to bone size evolution is questionable, since there are many other variables (sex, physiology, geography, etc…) which may also account for these changes. Continued study of paleocommunities in Florida could determine if reported changes in bone size were primarily influenced by chronology, geography, environmental, physiological, or a combinations of these factors.

94 Raissa Marques Mendonca, Biological Sciences,

Effects of nickel-enriched lotic sediments on macroinvertebrate community assemblages.

Abstract: Nickel in aquatic ecosystems can be toxic to aquatic invertebrates, but the cycling and toxicity of Ni is coupled to other elemental cycles. In sediments, sulfur, carbon, and iron compounds can bind Ni and limit its availability. Our study aimed to assess Ni bioavailability in sediments exposed to effluent from a Ni mine and evaluate Ni toxicity to indigenous macroinvertebrate community. Benthic macroinvertebrates were collected with petite ponar grabs in 10 locations at two reference and two effluent-exposed sites, concurrently with intact sediment cores and overlying water samples. Invertebrates were identified to lowest possible taxonomic level and summarized with common community indices. Ni bioavailability was assessed through geochemical analysis of the oxic and anoxic layers of sediment. Sediments at all sites were high in Fe oxides, while effluent-impacted sites contained high concentrations of sediment Ni and AVS. EPT taxa were observed in reference and effluent sites, which suggests that high total metal concentrations are not causing

biological impairment. Our results show the importance of considering coupled elemental cycles when predicting benthic invertebrate toxicity to sediment metals.

95 Alexa Stephenson, Anthropology,

A comparative study of the cholinergic innervation of the basal ganglia among human and nonhuman primate species.

Abstract: Cholinergic innervation of the basal ganglia is important in learning and memory, and striatal cholinergic neurons have been implicated in the integration of cognitive and motivational states with behavior. Further, deficits in acetylcholine have been correlated with loss of cognitive function in Alzheimer's disease and schizophrenia. These lines of evidence suggest a potentially important role for this subcortical innervation in the evolution of human cognitive functions. The present study quantified axons and interneurons immunoreactive for choline acetyltransferase (ChAT) in regions of the executive and motor loops of the basal ganglia of humans, great apes (chimpanzee and gorilla), Old World monkeys (macaque and baboon), and one New World monkey (capuchin). Stereologic methods were used to quantify Gv/Nv ratios, ChAT-ir axon length density to neuron density (ALv/Nv) and the percentage of cholinergic neurons in striatal regions. Interestingly, humans did not possess the highest or lowest density of cholinergic innervation, as expressed by axons or neurons. The phylogenetic differences observed were unexpected and indicated that a relative increase in cholinergic innervation was not required to support human cognitive abilities.

Doctoral Posters

Room 306

Doctoral I

JUDGE(S): Dr. Soumitra Basu, Dr. Elda Hegmann

97 Jibin Abraham Punnoose, Chemistry & Biochemistry,

DNA secondary structures in the full-length 3' telomeric overhang.

Abstract: The telomere 3' overhang in the chromosomes of eukaryotes consists of Guanine (G)-rich tandem repeats of nucleotides. These G-repeats can self-assemble into DNA secondary structures like G-quadruplex, G-triplex and higher-order structures in the presence of monovalent cations like K+. These structures are potential targets for cancer treatment since they inhibit the activity of telomerase-an enzyme over-expressed in most of the cancer cells. Thus, structural information of the non-B DNA structures present in the 3' telomeric overhang is vital for designing highly specific cancer therapeutic agents. Most of the current studies are focused on telomeric DNA with four TTAGGG repeats that can only host one G-quadruplex unit.

However, such a system oversimplifies the physiological context in which a telomere overhang may contain ~20-50 G-repeats. We employed single molecule force ramping method in place of ensemble-averaged methods using NMR or X-ray techniques to study the telomere DNA having up to 24 G-repeats. This technique allows to resolving the minor species formed in the construct approaching full-length of telomere overhang. From our force-extension experiments, we were able to conclude that G-quadruplex is the most abundant species (80%) present in telomere followed by G-triplex (15%) and Higher-order structure (5%).

98 Sumirtha Balaratnam, Chemistry & Biochemistry,

SHARP protein causes the remodeling of SRA1 lncRNA structure.

Abstract: Prostate cancer is one of the two most prevalent forms of cancer in men. The proliferation of prostate cells in the cancer can be directly correlated to transcription of several oncogenes mediated by the nuclear androgen receptor (AR). Androgen receptor stimulation of prostate cancer has been correlated with co-activation from the steroid responsive activator RNA (SRA1). The SRA1 assembles in a RNP complex that reduces AR activation. SHARP is one protein in the RNP complex that has been previously shown to interact with SRA1 through its RRMs and repress the RNA activity. However the specific binding sites of SHARP with the SRA1 and their functional roles are still unknown. We investigated the binding RRM to SRA1 by RNase T1 footprinting. The data show that there was a specific cleavage site at the G52 position of the SRA1 by SHARP-RRM2 which led to the remodeling of the entire SRA1 structure. In addition, the preliminary NMR and Chemical shift perturbation studies indicate that there is a direct interaction between the SHARP and SRA1. Further studies are required to completely analyze the detailed binding and functional roles of SHARP with SRA1. These studies have potential assist in the development of anti-prostate cancer therapy.

99 Nathan Beals, Chemistry & Biochemistry,

G-Quadruplex inducing hyaluronic acid hydrogel for potential biomedical applications.

Abstract: Over the past the decade, nanomedicine has gained an incredible amount of traction in the research community through its relevance in “smart” delivery, creating a platform to optimize treatment based on medical conditions. Hydrogels, one subset of the nanomedicine field, use a cross-linking polymer infrastructure to create a water-absorbing matrix showing various applications (a few being cartilage repair, tissue engineering, and drug delivery). We have investigated the conjugation of a short guanine-rich DNA sequence and the naturally occurring glycosaminoglycan, Hyaluronic Acid. Inducing potassium to the system, gives rise to DNA G-Quardruplex secondary structure formation and controllable polymer cross-linking capabilities. We

believe this conjugated hydrogel complex can be a dynamic treatment in specific disease states as CD44, the receptor for Hyaluronic Acid, is over-expressed in many types of cancer and plays a prominent role in the would healing mechanism.

100 Chamila Gunathilake, Chemistry & Biochemistry,

Uranium extraction from seawater using amidoxime modified mesoporous silica.

Abstract: Amidoxime modified ordered mesoporous silica (AO-OMS) materials were prepared for the first time by a two-step process involving: (1) synthesis of cyanopropyl-containing ordered mesoporous silica (CP-OMS) by co-condensation of (3-cyanopropyl)triethoxysilane (CPTS) and tetraethylorthosilicate (TEOS) in the presence of Pluronic P123 triblock copolymer under acidic conditions, and (2) conversion of cyanopropyl groups into amidoxime upon treatment with hydroxylamine hydrochloride under suitable conditions. CP-OMS samples exhibit structurally ordered uniform mesoporous, high specific surface area, and narrow pore size distribution. Conversion of cyanopropyl incorporated OMS samples to amidoxime modified counterparts increased specific surface area, total pore volume, microporocity, and nitrogen content. High affinity of amidoxime groups towards the uranyl ions makes the amidoxime-modified OMS materials as an attractive sorbents for uranium uptake. The presence of vast number of amidoxime binding groups further causes a momentous enhancement of the uranyl ions uptake (reaching 57 mg of U per gram of adsorbent from the laboratory prepared sea water). This proposed approach to obtaining high uranium uptake is particularly important due to the low concentration (3 ppb) of uranium exists in the seawater. The resulting amidoxime- modified OMS materials, because of their remarkable uranium recovery, are of great interest for alternative resource to generate nuclear power in the near future.

101 Jowita Ludwinowicz, Chemistry & Biochemistry,

Tailoring micro-mesoporosity in carbon spheres for carbon dioxide adsorption.

Abstract: Growing emissions of carbon dioxide (CO_2) became a major environmental concern; thus, the development of new sorbents has been driven by the need of efficient carbon dioxide capture and storage technologies. The developed material - micro-mesoporous carbon spheres contain high volume of pores (micropores and mesopores) and is ideal for CO_2 sorption. The Stöber method was selected for synthesis, as it affords carbon spheres with a substantial amount of ultramicropores (pores < 0.7 nm), which were shown to enhance CO_2 adsorption. Addition of colloidal silica and subsequent dissolution resulted in the creation of mesoporosity. Mesopores facilitate mass transfer of gas molecules, which is beneficial in sorption applications. The advantage of the proposed strategy is that the mesopore size can be easily tuned and the pore volume can be enlarged by increasing the amount of colloidal silica added to the synthesis. Activation of the obtained carbon-silica composites with CO_2

resulted in the formation of additional microporosity, yielding higher specific surface area and total pore volume, up to 1219 m2 g-1 and 1.02 cm3 g-1, respectively. The CO_2 uptakes at 0 and 23 °C (1 bar) for this sample were 7.8 and 4.1 mmol g-1, respectively.

102 Sangeetha Selvam, Chemistry & Biochemistry,

Effect of DNA supercoiling on G-quadruplex formation under torsional stress.

Abstract: G-quadruplexes are four-stranded DNA structures formed in tandem repeats of Guanine rich sequences prevalent in telomeres and gene-promoter regions. A specific sequence from the promoter region of insulin-linked polymorphic region (ILPR) capable of forming G-quadruplex structure was subjected to torsional stress similar to transcription conditions in cells. Understanding the effect of torsional stress on the topology of secondary structures found in the chromosomes is vital to have deep insight into various cellular functions. Herein, a magneto-optical tweezers was used to explore the topological coupling of duplex DNA with G-quadruplex under various superhelicities. The topology of the duplex DNA will be regulated to introduce superhelical constrain while simultaneously evaluating the mechanical properties of the secondary structures. On introducing negative supercoiling, the decrease in the stability of the duplex DNA will increase the energy difference between the G-quadruplex and duplex DNA thus paving way more formation of G-quadruplex. The population analysis of G-quadruplex at various superhelicities reveals that negative superhelicity favors the formation of G-quadruplex. The folding kinetics of the DNA duplex will decrease and also the difference in free energy of duplex DNA and G-quadruplex will reduce leading to both kinetically and thermodynamically favored G-quadruplex formation.

103 Mona Mirheydari, Physics,

Investigation into the biophysics of lipid droplet fusion.

Abstract: Lipid droplets, are important intracellular organelles. Aside from energy homeostasis, they function in processes as diverse as lipid signaling, synthesis of steroid hormones, and even viral replication. The formation and growth of lipid droplets is not fully understood and growth may proceed via the fusion of lipid droplets in certain cells. We recently showed that oil droplet fusion can be followed via a specially designed optical trap method whereby two oil droplets are captured in two traps. Merging process of two traps can be separated into two stages. First, a docking stage which, depends on the concentration of ions and type of anion in solution according to Hoffmeister series. The second stage is the physical fusion of two droplets. For further investigation of this mechanism, we used a home built surface tensiometer to determine the interfacial tension of an oil droplet in solution and how it depends on the ions concentration and type of anion. The results show that

interfacial tension alone cannot explain the observed behavior of oil droplet fusion. The interfacial tension does not significantly change from 10 to 50 mM ion concentration, where the docking rate of oil droplet fusion changes xx fold. The interfacial tension also does not show a trend when anions are compared in the Hoffmeister series.

104 Andrea Fitzgibbon, Biological Sciences,

Micro-cubed: Microbes, microelectrodes and microhabitats.

Abstract: Algae are important photosynthetic microbes in streams which influence the cycling of elements through changes in physicochemical conditions. During the day, photosynthesis increases dissolved oxygen (DO), pH and redox potential; when photosynthesis ceases at night, DO, pH and redox potential decrease. While the influence of algae on water column dynamics is relatively well understood, the interaction between algae and sediment physicochemistry is not. Rapid algal-driven physicochemical shifts may modify elemental concentrations in sediments. Microelectrodes are novel tools that can be used to help understand how algae influence the surrounding microhabitat. These sensors have a glass tip diameter of 100 um and provide a non-destructive sampling method to collect high spatial and temporal resolution microscale measurements of DO, pH and redox. Previous research has used microelectrodes in streams to quantify temporal algae metabolism using diurnal profiles. Proposed research will use microelectrodes to quantify temporal and spatial variation in benthic microbes and underlying sediment. Stream microbial communities consist of patches that are bare, covered with heterotrophic bacteria or colonized by algae. This spatial variation in the microbial community will likely coincide with patchiness in sediment physicochemistry. These temporal and spatial data may help link microbe-sediment interactions to whole-stream dynamics in element cycling.

Doctoral II

JUDGE(S): Dr. Fayez Safadi, Dr. Edgar Koojiman, Dr. Diane Stroup

105 Sewwandi Rathnayake, Biological Sciences,

The interactions of the exchangeable PAT protein, perilipin 3 with lipid monolayers.

Abstract: Lipid droplets (LDs) are dynamic cell organelles involved in a multitude of important cellular functions. Perilipin 3 (TIP 47) is a ubiquitously expressed LD-associated protein carrying a C-terminal amphipathic α- helix bundle. Being an exchangeable PAT protein, perilipin 3 can be found on both the surface of LDs and the cytosol. The exchangeability properties of perilipin 3 and how it specifically associates with growing LDs but not with cellular membranes in vivo is still not clear. In this study, the lipid binding properties several N-terminal truncation mutants as well as the full length perilipin 3 protein were investigated using lipid monolayers formed

at an air-buffer interface. We have purified large quantities of the recombinant protein by employing a combination of column chromatography techniques. Insertion of perilipin 3 into lipid monolayers was monitored by the increase in surface pressure of the lipid monolayer after injecting the proteins beneath a (phospho-)lipid monolayer. This work addresses the types of interactions responsible for perilipin 3 –lipid insertion and also of the role of amphipathic α-helix bundles in lipid binding. The interactions responsible for perilipin 3 – LD interaction will help us explain what sets this protein apart from the other phospholipid membrane binding proteins.

106 Pritam Sinha Roy, Biological Sciences,

Propofol causes vasodilation in vivo via TRPA1 Ion Channels: Role of nitric oxide and BKCa channels.

Abstract: TRPA1 and TRPV1 are key regulators of vasomotor tone. Propofol is an intravenous anesthetic known to cause vasorelaxation. Our objectives were to examine the extent to which TRPA1 and/or TRPV1 ion channels mediate propofol-induced depressor responses in vivo and to delineate the signaling pathway(s) involved. Propofol decreased MAP in control mice which was markedly attenuated in TRPA1-/- and TRPAV-/- mice but unaffected in TRPV1-/-mice. Moreover, pretreatment with L-NAME or Pen A attenuated the decrease in MAP in control and TRPV1-/- mice, and combined inhibition abolished the depressor response. In contrast, the markedly attenuated propofol-induced depressor response observed in TRPA1-/- and TRPAV-/- mice was unaffected by pre-treatment with Pen A or L-NAME when used either alone or in combination. These data demonstrate that propofol-induced depressor responses in vivo are mediated by TRPA1 ion channels with no involvement of TRPV1 ion channels and includes activation of both NOS and BKCa.channels.

107 Anjali Krishnan, Biomedical Sciences,

Culture dependent identification of microcystin degrading bacteria.

Abstract: Lake Erie the smallest and the warmest among the Laurentian Great Lakes is known for its problem of high nutrient levels. The Western basin of Lake Erie where multiple cities draw drinking water from is currently categorized as eutrophic. Anabaena, Microcystis, Planktothrix and Aphanizomenon are some of the fresh water cyanobacteria producing the toxin microcystin. Microcystins are a group of hepatocellular carcinoma causing toxins and have more than 80 natural variants, with Microcystin-LR being the most common form. Indigenous bacteria in lakes with a history of cyanobacterial blooms, have been found to actively degrade microcystin which is thought as the primary mechanism for microcystin degradation in natural environment and holds potential as a bioremediation technology for water treatment. Previously isolated pure cultures from Lake Erie are screened for its microcystin degrading capacity. The screening method involves usage of Biolog plate and a

confirmation step with liquid media lacking microcystin. The results are based on the change in optical density recorded for the purple color observed over a period of 7 days at intervals of 12 hrs. A set of 30 cultures were identified as positive after screening of 210 culture. MC+ bacteria are then identified by Sanger sequencing.

108 Holly Cappelli, Biomedical Sciences,

TRPV4 channels modulate pathological angiogenesis via Rho/Rho Kinase pathway

Abstract: Solid tumors require angiogenesis for continuous supply of oxygen and nutrients to grow, however the endless needs of the tumor create blood vessels that are structurally and functionally abnormal. We have found mechanosensitive ion channel TRPV4 to be functionally low in tumor-derived endothelial cells (TEC), which exhibit aberrant mechanosensitivity and abnormal angiogenesis that may be due to high basal Rho activity. In the current study, we investigated if TRPV4 modulates pathological angiogenesis via regulation of the Rho pathway. While basal Rho activity is high in TEC, overexpression or pharmacological activation of TRPV4 reduced active Rho. Importantly, activation of TRPV4 and/or inhibition of Rho decreased the abnormally high rate of migration found among TEC. Further, we found that Rho Kinase inhibitor, Y-27632, normalized abnormal tube formation displayed by TEC and TRPV4 null (TRPV4KO) endothelial cells. Using an in vivo tumor model with wild type (WT) and TRPV4KO mice, we found a significant increase in tumor volume and abnormal vessels in KO mice compared to their WT counterparts. Finally, we found that Y-27632 treatment restored pericyte coverage, and in combination with a chemotherapeutic drug, Cisplatin, reduced tumor growth. Altogether our findings suggest mechanosensitive ion channel TRPV4 regulates pathological angiogenesis via modulation of the Rho pathway and provide a novel approach to normalize tumor vasculature and improve chemotherapy.

109 Gaelle Muller-Greven, Biomedical Sciences,

Glioma stem cells internalize perivascular bevacizumab via a non-canonical pathway and target it for recycling or degradation.

Abstract: Antiangiogenic therapy shows great promise for treatment of cancer. Bevacizumab is a humanized mAb that blocks VEGF-A, thereby inhibiting angiogenesis. It has received FDA approval for patients with recurrent glioblastoma (GBM); however, approximately 30% of patients are non-responsive. It has been assumed that Bevacizumab solely targets circulating VEGF-A; however, perivascular VEGF-A could also be an important target. We hypothesized that Bevacizumab is transcytosed across brain endothelial cells (ECs) to the perivascular niche containing glioma stem cells (GSCs) that internalize it. Bevacizumab is internalized by normal and tumor-isolated brain ECs in a time-dependent manner. We found that 95% of GSCs internalize Bevacizumab within 30 minutes and it can be recycled (Rab4, fast

recycling), or degraded (LAMP1, late endosome/lysosome). Internalization in GSCs was partially inhibited by a EIPA, a macropinocytosis inhibitor. GSCs do not express FcRn and so do not internalize Bevacizumab via the canonical IgG internalization pathway. We found a gradient in vivo of Bevacizumab extending from the vessel into the tumor and within tumor cells in an orthotopic xenograft mouse model of GBM. Our data shows that Bevacizumab enters the tumor area and is internalized by GSCs that recycle or degrade it, potentially affecting therapeutic response.

110 Michal Marszewski, Chemistry & Biochemistry,

Effect of scaffold source on titania materials obtained by scaffold-assisted templating.

Abstract: In this work, we investigated effects of amount and nature of a silica scaffold on the structures of titania materials obtained by a scaffold–assisted templating. Two sets of materials were prepared by using either silica nanoparticles or tetraethyl orthosilicate (TEOS) as the silica source. The resulting materials exhibited high values of the structural parameters: for the pure titania materials specific surface areas ranged from 13 to 259 m2 g-1 and total pore volumes ranged from 0.02 to 0.59 cm3 g-1; for the silica–titania composites specific surface areas ranged from 69 to 416 m2 g-1 and total pore volumes ranged from 0.10 to 0.27 cm3 g-1. The results showed that the TEOS–generated silica favored development of specific surface area while the silica nanoparticles favored development of pore volume in the final etched materials. This observation is explained in terms of the scaffold nature, either condensed (silica nanoparticles) or dispersed (TEOS–generated silica). The condensed nanoparticles created new, large voids after their removal, resulting in development of the pore volume. The TEOS–generated silica, on the other hand, due to its dispersed nature, was more in contact with the titnia's surface, resulting in a better support and improved surface area. In both instances, higher scaffold amounts resulted in better structural parameters.

111 Anna Droz, Biological Sciences,

Mobile as a forklift: Movable ecosystems.

Abstract: Urban areas can contain up to 65% impervious surfaces which are the main source of sheet water runoff during heavy storm events. The persistence of combined sewer/storm drains in the city of Cleveland makes for an easily overwhelmed system in heavily urbanized or industrial areas. The goal of our project is to reduce this runoff and therefore alleviate the burden on the storm/sewer drain system by engineering a system to reduce peak flows by collecting and making use of the storm water onsite through evapotranspiration. Through conceptualizing, design development, and prototyping we have developed a structure which reduces water runoff, makes productive places from once unused spaces, and incorporates living biomass into storm water removal. The design is implementable either at grade or on a structurally

sound roof and is optimized per scenario to provide a maximum rainwater usage in a minimized space. This movable design is completely customizable for each user's needs and desires for their site, and can be rearranged at will to best serve these needs in perpetuity. This project will continue to be developed into the future with experimental testing and project design formation to be deployed on site to test effectiveness and durability.

Doctoral III

JUDGE(S): Dr. Jay Jahangiri, Dr. Vladimir Gurau

112 Chenjian Fu, Geology,

Paleomagnetic apparent Polar wander paths, the plate tectonics' storyteller, with varying smoothing algorithms.

Abstract: Although geoscientists have used seafloor magnetic anomaly and fracture-zone to very well constrain plate reconstruction for 140 Ma to the present-day, we try to develop new analyzing techniques, only based on global paleomagnetic data, to re-build apparent polar wander (APW) paths of main plates for times since 100 Ma. We compare these rebuilt paths with model-predicted APW paths, derived from several absolute reference frames, to see if paleomagnetic APW paths can be as well constrained as the ones the models give. Large geologic data sets need novel methods of analysis. Modeling, and subsequent visualization was achieved with high performance computing through Scipy/Numpy/Pandas/Pysal, GIS arcpy, R, Bash and Generic Mapping Tools. We have developed 10 moving average methods (i.e. how to pick data for Fisher statistical calculation) and 6 weighting algorithms (i.e. how to weight picked data), which means for each plate, we can get 60 paleomagnetic APW paths. Basically, from most APW paths are very close to the model-predicted ones, and surely from some methods we can't because of applications of inappropriate algorithms or incorrect assumptions. In our future work, we plan to develop a reasonable comparison algorithm to quantitatively determine which smoothing method is the best. The best result(s) will be used to test the robustness of previously published kinematic models plate motions.

113 Jonathon Van Gray, Biological Sciences,

Stream biofilm recovery trajectory after compounded perturbations.

Abstract: Stream biofilms serve as the nexus for a host of vital ecosystem services, such as carbon fixation and storage, and nutrient cycling. Yet, as a sessile community in a transient system, biofilms are susceptible to removal due to disturbances affecting stream flow. As landscape modifications and increasingly erratic weather patterns converge to create flashier rain events, the potential for biofilm removal via disruptive stream flows increases. Of particular concern is how frequent disturbances occurring

concurrently with community recovery (i.e. compounded perturbations) affect biofilm recovery trajectory, and whether the structural and functional aspects of the biofilm community can be restored post-perturbation. Methods Biofilms were subjected to artificial high-frequency perturbations, and during a recovery period, weekly samples were collected and bacterial community structure was examined. Leucine uptake, chlorophyll a, and extracellular enzyme activity were used as proxies for biofilm function. Results Disturbance effects weren't observed until the second week, and then only for enzyme activities. After 3 weeks, chlorophyll a, leucine uptake, and β-xylosidase activity were significantly affected by treatment interactions. By the final week no functional differences were observed with the exception of the effect of disturbance on leucine uptake ($p \leq 0.05$). Community composition remained affected after 4 weeks, with communities showing relatively distinct compositional patterns along treatment lines ($P = 0.022$).

114 Binaya Adhikari, Biological Sciences,

Exploring distribution of sex-determining genes and sex phenotypes in gynodioecious wildflower Lobelia siphilitica *L. (Campanulaceae).*

Abstract: Most flowering plants are hermaphroditic, each plant producing both male and female gametes (pollen and ovules, respectively). However, a rare condition, called gynodioecy, is found in some species where female and hermaphroditic plants co-occur. In gynodioecy, cytoplasmic male sterility genes (CMS) disrupt pollen production, thus making a plant functionally female. In hermaphrodites, CMS are either absent or countered by nuclear restorer of fertility genes (Rfs). More than one type of CMS may occur in a species, each of which needs a specific Rf for restoration. Percent females in populations of gynodioecious species can be highly variable (0 up to >80%). Theory predicts that high-female populations have multiple CMS types or ones for which Rfs are rare or absent. By contrast, low-female populations have CMS types for which Rfs are commonly available. We used crossing experiments to infer the distribution of CMS and Rf types among populations of gynodioecious Lobelia siphilitica with variable female frequencies. As predicted, at least one high-female (51%) population had multiple CMS types. Also, some high-female (>35%) populations had some CMS types that were never/rarely restored, even when crossed to plants from multiple populations. We conclude that high-female populations have multiple or 'hard-to-restore' CMS types.

115 Michelle Cordier, Mathematics,

If you can hide behind it, can you hide inside it (with rotations)?

Abstract: We provide an example where two bodies in 3-dimensions are such that every projection of C can be rotated into the corresponding projection of K, however C itself can never be rotated to be contained in K.

116 Mike Doyle, Mathematics,

Partitioning the set of subgroups of a finite group using Thompson's generalized characters.

Abstract: In this work we study functions from a finite group to the set of integers. We partition the set of subgroups of a finite group by creating an equivalence relation called clinked. The goal is to define clinked so that every equivalence class is associated with a "nice" counting function. We classify the partition for three infinite families of groups and we observe that, in some cases, the set of subgroups can be partitioned even further to produce more "nice" counting functions.

117 Abdulaziz Aloliqi, Biomedical Sciences,

Connexin 43 and E-cadherin modulate prostate cancer cell migration.

Abstract: Connexins play a major role in cell-cell communication and, with cadherins, form a bidirectional signaling pathway to assemble gap junctions and alter cell behaviors, such as motility. To assess the effect of Connexin 43 on migration of prostate cancer cells we performed two types of migration assays using shRNA Cx43 transfected PC3 cells with suppressed connexin 43. Wound healing and transwell assays were used to assess the migratory potential of stably transfected PC3shCx43 cells. When we reduced Cx 43 we saw approximately a two-fold reduction in migration by shCx43 transfected PC3 cells compared to those transfected with scramble controls. Since suppression of Cx43 reduced migration of the highly migratory PC3 cells, we wondered whether this reflected a partial loss of mesenchymal traits (e.g., motility) and acquisition of epithelial markers, (e.g., E-cadherin expression). Using quantitative RT-PCR, E-cadherin expression was assessed in PC3shCx43 and scramble control cells. Suppression of Cx43 increased E-cadherin mRNA levels 5-foldor greater in PC3shCx43 cells than in scramble control cells. These results were consistent with our hypothesis that differential connexin subunit gene expression in prostate cancer cells could result in different metastatic potential. Overall, these results suggest that reducing high levels of Cx43, associated with enhanced E-cadherin expression and reduced migratory behavior could potentially block lethal tumor progression of prostate cancer cells.

Doctoral IV

JUDGE(S): Dr. Mary Ann Raghanti, Dr. Anthony Tosi

118 Spencer Andrei, Biomedical Sciences,

Expression of TRP Ion Channels in Cardiac Myocytes.

Abstract: The overall goal of this investigation was to determine the extent to which transient receptor potential (TRP) ion channels of the A1 and V1 subtypes are

expressed in the murine heart and whether their expression patterns are altered in the setting of diabetes. TRP ion channels are well-established ion channel receptors found throughout the body and have significant roles in regulation of the cardiovascular system. Surprisingly little is known about coexpression patterns of TRPA1 and TRPV1 in diabetic and healthy cardiac myocytes or the role they play in mediating intracellular events in the heart. Preliminary data from our lab shows for the first time that TRPA1 is expressed at the protein level in isolated mouse cardiac myocytes. Furthermore, we have found that TRPA1 and TRPV1 in cardiac myocytes show significant ($P<0.05$) dose-dependent calcium responses when exposed to allyl isothiocyanate (AITC) and capsaicin, respectively. Moreover, the expression levels of these channels in diabetic cardiac myocytes are significantly lower ($P<0.05$) than those in healthy cardiac myocytes. In conclusion, TRPA1 and TRPV1 ion channels in cardiac myocytes respond to AITC and capsaicin, respectively, and are down-regulated in diabetic cardiac myocytes.

119 Rahul Bhattacharjee, Biological Sciences,

Gsk3a is essential for sperm function and male fertility.

Abstract: The signaling enzyme glycogen synthase kinase 3 exists as two isoforms - GSK3A and GSK3B. GSK3 is part of key signaling pathways in several cells and tissues. We have previously shown that both isoforms of GSK3 are present in sperm and testis. Increase or decrease in sperm motility in vitro resulted in changes in GSK3 phosphorylation. The enzyme activates a mammal specific protein phosphatase isoform PP1γ2, a key enzyme essential for sperm function. Here we examined the role of Gsk3a in male fertility using a targeted gene knockout approach. Gsk3 (+/-) male and female mice are fertile. However, global knockout of Gsk3a results in male infertility, while females are normal. Testis weights and sperm numbers of Gsk3a (-/-) mice are comparable to the fertile Gsk3a (+/-) controls. However sperm motility is compromised in Gsk3a KO mice. Sperm ATP levels were lower in Gsk3a (-/-),compared to wild type mice. PP1γ2 protein levels were unaltered, but its catalytic activity was elevated in KO sperm. Remarkably, capacitation associated changes in tyrosine phosphorylation of proteins are absent or significantly lower in Gsk3a KO sperm. Moreover the glycolytic enzyme, hexokinase, is also not constitutively tyrosine phosphorylated in these sperms. The GSK3B isoform was not able to compensate for the loss of GSK3A in testis and sperm.

120 Lucy Coughlin, Biomedical Sciences,

Mitophay and autophagy in the DBA/2J glaucomatous mouse optic nerve.

Abstract: In glaucoma, retinal ganglion cell (RGC) axons that make up the optic nerve, degenerate, leading to blindness. While the mechanisms underlying this degeneration are not well understood, axonal transport deficits have been observed in

early glaucoma development. A potential cause for transport deficits may be decreased organelle recycling, most notably mitochondria. Autophagy related to the removal of damaged mitochondria is called mitophagy. In the DBA/2J (D2) mouse model of glaucoma, it has been observed that mitochondria in the optic nerve are both smaller in size and more numerous than in age-matched controls. However, these mitochondria produce less ATP. Two proteins involved in mitophagy are PINK1 and Parkin. When there is a reduction in mitochondrial membrane potential, PINK1 accumulates on the outer mitochondrial membrane where it recruits Parkin. Parkin ubiquitinates several outer membrane targets, "tagging" the mitochondria for removal and degradation. We believe that dysregulated mitophagy leads to the accumulation of non-functional mitochondria in the RGC axon, impairing transport, thus leading to axonal degeneration. Western blot and TEM analysis demonstrated elevated levels of autophagy related protein LC3II and lysosome related protein LAMP1 proteins in D2 optic nerve even before large scale axonal degeneration occurs. These data suggest that there are deficits involving autophagy occur prior to degeneration and vision loss.

121 Sara Harper, Health Sciences,

Cognitive function and fitness improvements after a multidimensional exercise intervention in healthy older adults.

Abstract: Aging is associated with declines in cognitive function and physical fitness. Previous studies have shown that exercise improves cognitive function in older adults. We hypothesize that older adults will show improved cognitive function and physical fitness after an 8 week multidimensional exercise intervention. METHODS: Six healthy older adults (65.7 ± 7.2 years) completed the exercise intervention. The intervention involved active-assisted (AA) arm and leg cycling (Motomed Viva 2, OH), flexibility, balance and resistance training. Cognitive function testing was completed with IntegNeuro ® testing that assessed executive function and emotional recognition. Fitness assessments included body mass index (BMI), trunk forward flexion (flexibility), muscular endurance (curl-up), muscular strength (bench press and leg press), and cardiovascular function (resting heart rate [HR] and stepping HR). RESULTS: There were improvements in BMI (P=.05), flexibility (P=.039), bench press (P=.002), leg press (P=.003), curl-up performance (P=.0031), resting HR (P=.005) and stepping HR (P=.021). There were improvements in cognitive function identifying neutral (P=0.018) and happy (P=0.04) emotional recognition. Executive function increased Stroop correct responses (P=0.008) while the errors decreased (P=0.02). DISCUSSION: The multidimensional exercise intervention with AA cycling, flexibility, balance and resistance training led to cognitive function and physical fitness improvements in older adults. Supported by grants from The Foundation for Aging Studies, Exercise Science Research and KSU EHHS Seed Grant.

122 Adrienne Hopson, Biological Sciences,

Sound production by Procambarus acutus *crayfish.*

Abstract: Sound production is an important but poorly studied ecological component in wetland habitats. Animals produce sound to attract mates, detect or deter predators, coordinate their movements and defend territory. Most studies on the importance of sound production by invertebrates have been conducted in terrestrial or marine systems. Far fewer studies have examined freshwater invertebrates. This demonstrates a gap in our basic knowledge, understanding and research data as related to aquatic invertebrates. Recently studies have shown that Procambarus clarkia crayfish produced sound. I conducted research to determine if the Procambarus acutus crayfish, a related species, also produce sound. Crayfish were recorded using hydrophones in pairs and individuals. Results I found that Procambarus acutus crayfish produced audible clicks within a frequency range of 6kHz-45kHz. During the research trials, clicks were produced randomly during intraspecific interactions. The exact function of these clicks has not been determined.

123 Philip Iffland, Biomedical Sciences,

Neuroprotective role of the humoral immune response in an animal model of SE.

Abstract: Autoimmune epilepsies are associated with antibodies targeting neurons, but IgGs are often effective in treating these patients. Evidence shows that non-specific IgGs extravasate into brain from blood and enter neurons. The significance of IgGs in brain extracellular/ intracellular compartments is not defined. We tested the hypotheses that non-specific IgGs are neuroprotective in a model and in vitro. Mice were injected with pilocarpine, monitored using EEG and then sacrificed. Mice were given IP immunoglobulin's prior to pilocarpine injection. Tissue was collected and processed (immunohistochemistry, FACS and ELISA). In vitro experiments were conducted using human neurons exposed to human serum. Exposure of neurons to IgGs resulted in cellular uptake but no toxicity. In pilocarpine-treated mice, IgG in neurons correlated with cell survival. Levels of IgGs at time of pilocarpine challenge correlated with reduced SE mortality. Exogenous IgGs prevented the development of SE in 75% of mice. Cytotoxic T lymphocytes levels at time of pilocarpine correlated with increased severity of SE. B cells correlated positively with seizure latency. Intracellular accumulation of IgG does not cause neuronal cell death after SE or in vitro. BBB leakage and subsequent intracellular localization of IgG may be a mechanism of the anti-seizure effects of non-specific IgG to treat seizures.

124 James Redfearn, Biological Sciences,

A complete reconstitution of the Escherichia coli *Cytokinetic Ring.*

Abstract: Bacterial growth and the process of cell division in bacteria are areas of intense study. At the (literal) center of these processes is the protein FtsZ, which is required for cytokinesis – the final splitting of one cell into two. This protein forms a ring at the mid-cell (known as the Z-ring) that provides both the scaffold on which the complete cytokinetic machine is built and the mechanical force needed to split the cell. Study of the Z-ring in vivo is a significant challenge due to the essential nature of the ring's function. Prior we reported the development of a new reconstitution method that solves these problem. In our method, a supported cylinder-shaped lipid bilayer (approximating the cell membrane of rod-shaped bacteria) is formed by the fusion of small unilamellar vesicles against a glass substrate after which solutions of a recombinant, membrane-targeted FtsZ are introduced by simple capillary action. In this work we report a modification of this system that allows a two-protein reconstitution involving native FtsZ that anchors to the membrane by binding to purified FtsA, which more closely mimics the cytokinetic ring found in vivo.

125 Shane Draper, Health Sciences,

High-intensity exercise on central and peripheral vascular function.

Abstract: Problem: The effect of high-intensity exercise on central and peripheral vascular function are unknown. Methods: Nine young, healthy men (Age: 22±2 yrs; Ht: 1.72±0.04m; Wt: 77.2±5.3kg; Body fat percentage: 10.2±2.7%)) participated in the study. The high-intensity exercise consisted of 3 sets of 30-second, maximal effort Wingate Anaerobic Tests (WAT) with 2 minutes of rest between each set. Each WAT utilized 7.5% of body weight as resistance on the flywheel. Measurements were taken in the supine position at rest and 5 minutes after completion of the WATs. Central and peripheral vascular functions were assessed via carotid-femoral pulse wave velocity (cfPWV) and pulse wave reflection, respectively. Results: There was no change in cfPWV (rest: 5.56±0.59 m/sec; recovery: 5.73±0.53m/sec) in response to the WAT. In addition, there was no significant change in the central augmentation index (rest: 7.32±10.96%; recovery: 6.44±8.0%) from rest to recovery. However, there was a significant ($p<0.05$) increase in the augmentation index normalized at 75 bpm (rest: 3.29±9.82; recovery 21.21±10.87). Time of the reflected wave (rest: 2488±475ms; recovery: 3516±291ms) also increased significantly from rest to recovery. Conclusion: These data demonstrate that high-intensity exercise may not affect central aortic function to the same degree as peripheral vascular function.

Doctoral V

JUDGE(S): Dr. Derek Kingsley, Dr. Laurie Wagner

126 Curtis Fennell, Health Sciences,

Arterial stiffness and wave reflection following an acute bout of resistance exercise in resistance-trained individuals.

Abstract: Problem: Evaluation of arterial stiffness and pulse wave reflection provide insight into vascular function more so than traditional measures such as brachial blood pressure. Methods: Thirteen young, healthy individuals (aged 23±3 yrs) with 9±3 yrs of lifting experience volunteered for the study. Participants performed 2 randomized sessions consisting of a quiet control or an acute bout of resistance exercise (ARE) using free-weights. The ARE consisted of 3 sets of 10 repetitions at 75% 1 repetition maximum for the squat, bench press and deadlift with 2 minutes of rest between sets and exercises. Carotid-femoral pulse wave velocity (cfPWV) and wave reflection were collected at rest and 10 minutes after each session. Results: There was no significant ($p>0.05$) interaction for cfPWV. There was a significant interaction for the augmentation index (AIx; rest: 112.6±4.6%, recovery: 120.7±4.5%, $p<0.01$), and the AIx normalized to 75bpm (rest: 0.05±13.7; recovery: 21.4±12.3, $p<0.001$) such that they were significantly increased during recovery from the ARE compared to rest and the control. There was no effect of the ARE on brachial blood pressure. Conclusion: These data suggest that an ARE significantly alters aortic wave reflection characteristics but not aortic pulse wave velocity without affecting brachial blood pressure.

127 Hayden Gerhart, Health Sciences,

Forearm blood flow and reactive hyperemia in response to an acute bout of resistance exercise using free-weights.

Abstract: Problem: An acute bout of resistance exercise (ARE) may have a negative effect on vascular function. Methods: Ten young, healthy individuals (aged 23±3 yrs) volunteered for the study. Forearm blood flow (FBF) was assessed by strain gauge plethysmography at rest and was measured after 5 minutes of circulatory occlusion (220 mmHg) to induce reactive hyperemia 15 minutes after ARE. The ARE consisted of 3 sets of 10 repetitions at 75% 1 repetition maximum on the squat, bench press and deadlift. Each participant also completed a quiet control session of the same duration. Results: Resting FBF (4.2±1.5 2ml//min/100ml) and peak blood flow (20.4±13.62 ml//min/100ml) were similar at rest between conditions. There was a significant interaction ($p<0.05$) for FBF after the ARE (10.9±6.2 ml//min/100ml) and for peak blood flow (32.7±23. 2 ml//min/100ml) such that they were augmented compared to rest and recovery from the control (FBF: 3.9±1.6 ml//min/100ml; peak blood flow: 20.4±12.3 ml//min/100ml). Area under the curve for FBF-RH significantly ($p<0.05$) increased after the acute bout of free-weight resistance exercises by 128% and did not

change after the control (5.6%). Conclusion: These data demonstrate that acute free-weight resistance exercises significantly alter microvascular endothelial function in young, healthy resistance-trained individuals.

128 Rao Nilin, Health Sciences,

Thermochromic liquid crystal fabric for early home detection of potential high risk foot complications: A proof-of-concept study.

Abstract: Background: Changes in skin temperature occur in various disease processes. An at home device for early detection of temperature changes would reduce the risk of complications significantly. The purpose of this study is to evaluate the accuracy of a new thermochromic liquid crystal fabric (TLCF), which would aid in the detection and prevention of pathologies. Methods: To increase its sensitivity and range, the TLCF was designed with three distinct geometric patterns corresponding to specific temperature ranges. The color spectrum changed with increasing temperature. The maximum temperatures of nine distinct regions of 200 hands were compared using the TLCF against a thermal camera reference standard. Temperature differences were then statistically analyzed using a paired t-test or Wilcoxon Signed Rank Test. Results: Temperatures detected by the TLCF were not statistically different from the thermal camera in most digits, but were significantly different for regions in the palm of the hand ($p<0.05$). These differences were consistent and determined not to be clinically relevant. Conclusion: We determined that the TLCF was able to accurately map temperatures for specific regions of the hand. Temperature change would be detected by the TLCF, indicating that it would be useful as a new diagnostic aid. Further research and development of a final prototype, and future clinical trials is warranted.

129 Gan Golshteyn, Podiatric Medicine ,

Common foot deformities associated with falls among elderly patients in nursing homes.

Abstract: Foot deformities are one of the most common conditions in podiatric medicine and other health care professionals. Recent studies have indicated that foot/ lesser toe deformities are highly prevalent in older adults and are associated with impaired balance and functional ability. Identifying foot and toe deformities is important for ensuring proper diagnosis and treatment to help prevent falls in older patients. Literature reports several foot and toe deformities are a risk factor for falls in older patients in nursing homes. Common findings in the literature indicated that older people who fall exhibited decreased ankle flexibility, severe hallux valgus deformity, decreased toe plantar flexor strength, decreased plantar tactile sensation and disabling foot pain. One foot-related factor that has been found to affect balance, gait, and functional ability in older adults is foot pain and because foot pain has been found to

be present in 20% to 54% of community-dwelling older people. The presence of multiple foot deformities also seems to contribute to falls as does comorbidities such as diabetes, cardiovascular disease, neuropathy, joint pain, arthritis, & systematized postural instability. The purpose of this review is to investigate if the literature supports that foot deformities correlate with falls in the elderly within nursing homes.

130 Dina Keeler, Podiatric Medicine,

The effect of circular static external fixation in the management of post-debridement foot wounds.

Abstract: Intro Successful healing of large post-debridement defects in the diabetic neuropathic foot is complicated not only by a vast open area and possible residual bone infection but also by underlying musculoskeletal instability. Case Report Our patient with diabetes and peripheral neuropathy presented with a necrotizing infection of his left foot. He was treated with multiple debridements in the inpatient setting for infection eradication. His resultant wound then healed over approximately 3 months with negative pressure wound therapy, intravenous antibiosis, external fixation, and split-thickness skin grafting. Discussion/Conclusion While there is long-standing knowledge regarding the effective use of external fixation in the lower extremity, there is a paucity of reports concerning use of this technique for the sole purpose of healing complex wounds, such as those encountered in the post-debridement phase of a diabetic foot infection. Since the proliferation of granulation tissue and the medical treatment of residual osteomyelitis will improve with greater three-dimensional stability of their micro-environments, the use of an external fixation device would seem to be an ideal tool in the management of these patients. We believe that our report confirms this and, therefore, encourages the use and further study of this technique in this patient population.

131 Sarah Richards, Podiatric Medicine,

Synovial lipoma of the subtalar joint: A rare case report.

Abstract: Introduction Lipomas are benign masses that are rarely associated with synovial membranes. In addition, there is a paucity of reports describing synovial lipomas in the foot. Furthermore, there currently exists no reported occurrence in the subtalar joint. Case Report This case report documents the presentation, clinical evaluation, advanced imaging, and surgical management of a 45-year old male afflicted with a large synovial lipoma of the subtalar joint. Discussion While lipomas are relatively common in the foot, synovial lipomas are rarely reported. Our literature search revealed no description of this lesion involving the subtalar joint. As described in our report, an intra-articular space-occupying mass such as this can result in significant gait limitations due to pain and loss of motion in a vital hindfoot joint. In our patient, open excision of this lesion was important as it allowed for a reliable

pathologic diagnosis, determination of the mass origination site, and subtalar joint motion restoration.

132 Ryon Wiska, Podiatric Medicine,

Functional ankle instability: A long term complication of conservative and surgical therapy.

Abstract: Inversion ankle sprains are one of the most common ankle injuries today. Despite surgical or conservative care of ankle sprains, a percentage of patients report a residual sensation of "giving way" or functional ankle instability (FAI). The purpose of this research was to compare residual deficiencies between conservatively and surgically treated FAI patients. This research was an observational case-control study. The presence or absence of FAI in each subject was determined using the Cumberland Ankle Instability Tool, anterior drawer test, and talar tilt test. Subjects were then split into three groups: 1)No FAI, 2) FAI after conservative treatment, and 3) FAI after surgical treatment. Two methods were used to quantitatively measure differences in the degree of ankle instability: 1) Single Leg Balance Test to calculate time in balance, and 2) F-Mat recordings of center of pressure to determine the number of shifts greater than 50% of body weight that occurred. The degree of ankle instability was compared among the three groups, and the results were analyzed. Results of the research provide both podiatric surgeons and their patients with data on residual FAI from varying treatment methods, with the end goal of treating ankle sprains while minimizing complications.

133 Angela Freeman, Biological Sciences,

Arginine vasopressin influences social behavior in Richardson's ground squirrel.

Abstract: Arginine vasopressin (Avp) and its homologues modulate behavior in nearly every vertebrate taxa, and thus provide an elegant system for comparative research. In rodents, Avp is best known for modulating social behaviors, in particular affiliation such as: grooming, sniffing, and forming social bonds and memories. Researchers recently discovered Avp can influence social communication by modulating rodent pup vocalizations. We extended this work in Richardson's ground squirrels (Urocitellus richardsonii; RGS) which are free-living social rodents, in which alarm calling is a proximate manifestation of sociality. To test the hypothesis that Avp influences social behavior (including communication), we implanted osmotic minipumps into RGS and administered Avp or saline intracerebroventricularly. We examined behavior using a general behaviour survey, a predator model presentation, and a trap-aggression experiment, each before and after Avp or saline administration. While saline treatment had no effect, Avp reduced aggression and increased predator vigilance and escape behavior, and increased certain vocalizations in males. Avp may be acting on other neural substrates to alter these behaviors, or perhaps we have

discovered a species-specific effect. Our discovery of Avp's effects on vigilance in a social setting is particularly exciting and thus highlights Avp's extensive influence on social behaviors.

Doctoral VI

JUDGE(S): Dr. Gemme Casadesus Smith, Dr. Kristy Welshhans

134 Shruti Jain, Biological Sciences,

Local translation of Down syndrome cell adhesion molecule in axon growth and guidance.

Abstract: Down syndrome cell adhesion molecule (Dscam) is known to play an important role in many neurodevelopmental processes such as axon guidance, dendrite arborization and synapse formation. DSCAM is located in the Down syndrome (DS) trisomic region of human chromosome 21 and implicated as one of the genes directly contributing to the DS brain phenotype, which includes a reduction in the formation of long-distance connectivity. Thus, it is of significant interest to understand the underlying mechanisms by which Dscam regulates axon pathfinding. The local translation of a select group of mRNA transcripts in developing neurons is necessary for the formation of appropriate neuronal connectivity. We have found that Dscam mRNA is localized and locally translated in growth cones, which are the pathfinding structures at the tip of extending axons.. Local translation of Dscam mRNA in growth cones increases in response to netrin-1, suggesting a role for the local translation of Dscam mRNA in axon pathfinding. This study also examines the formation of neuronal connectivity in DS mice (Ts65Dn) and how the local translation of Dscam mRNA is dysregulated in this disorder. These results contribute to our understanding of improper neuronal connectivity in Down syndrome and the etiology of this neurodevelopmental disorder.

135 Leah Kershner, Biological Sciences,

RACK1 is necessary for the formation of point contacts and axon growth .

Abstract: In developing neurons, select mRNAs are transported to and locally translated within growth cones, the pathfinding structures at the tip of extending axons. Formation of proper nervous system connectivity is dependent upon local translation within growth cones, but the specific locations and molecular mechanisms of local translation are not well understood. Local translation of β-actin mRNA within the growth cone is necessary for appropriate axon guidance and is dependent on Receptor for activated C kinase (RACK1), a ribosomal scaffolding protein. Interestingly, we found that RACK1 is localized to point contacts, adhesion sites important for axonal pathfinding. This suggests that local translation is regulated at point contacts. Indeed, both β-actin mRNA and RACK1 colocalize with point

contacts, and this colocalization increases following brain-derived neurotrophic factor (BDNF) stimulation. Additionally, the density of point contacts within growth cones increases following BDNF stimulation in a RACK1 dependent manner. Finally, RACK1 is required for axonal growth. Therefore, the formation of point contacts may facilitate local translation within growth cones, and thus be critical to appropriate neuronal development. These data provide further insight into how and where local translation is regulated within growth cones, thereby leading to proper connectivity formation in the developing nervous system.

136 Shannah Witchey, Biological Sciences,

Immediate early gene activation in postparturient oxytocin receptor forebrain knockout mice

Abstract: In female mammals, the oxytocin (Oxt) system is not only important to parturition and milk ejection but also plays a role in the initiation of maternal behavior. Our lab's previous work demonstrated that disruption of Oxt signaling in Oxt receptor knockout (Oxtr-/-) mice and forebrain Oxt receptor knockout mice (OxtrFB/FB) results in significant increases in first-litter abandonment. These data suggest Oxt, signaling through the Oxtr, lowers the threshold for the initiation of maternal care. To determine where Oxt acts in the brain to affect maternal care in mice, we examined immediate early gene activation (cFos) in OxtrFB/FB and wildtype brains we collected one hour after parturition. We hypothesized that in brain areas important for the onset of maternal care; there would be differences in cFos immunoreactivity. We predicted that OxtrFB/FB mice would show reduced cFos activation in some of these brain areas. We found that OxtrFB/FB mice had increased c-Fos immunoreactivity compared to wildtype controls in the nucleus accumbens shell (NAcS). The NAcS, which expresses the Oxtr, is important for rewarding motivated behaviors, including maternal behavior. Thus, in mice, Oxt signaling in the NAcS may impact the responsiveness of dams to pups, perhaps affecting the rewarding properties of their interaction, thereby altering the likelihood that a dam will initiate maternal care.

137 Jeffrey Blair, Biomedical Sciences,

Neuronal luteinizing hormone receptor activation affects synaptic plasticity.

Abstract: We and others showed that reducing serum luteinizing hormone (LH) levels in ovariectomized rodents rescues cognitive function. Furthermore, we determined by immunofluorescence that LH is endogenously made within the brain and that its levels oppose serum LH levels, such that after ovariectomy the levels of brain LH are lowest. This suggests that loss of LH receptor (LHR) activation, derived from reduced levels of brain LH after ovariectomy, may be a mediator of cognition and neuroplasticity loss associated with menopause. LHR is a GPCR classically known to be a key component

of reproductive function through its activation of cAMP and PI3K pathways, both key pathways in neuroplasticity and cognition. Therefore, we investigated whether LHR activation could drive changes in neuronal morphology. We found that LHR activation increased the number of secondary neurites and branch points in vitro, and mice treated with leuprolide acetate, which increases brain LH, have an increased spine density in vivo. Taken together, these data suggest that LHR activation increases signaling events associated with synaptic plasticity and regulates neuronal morphology. Given the role of these cellular aspects on learning and memory, our data suggest that LHR activation may be a key regulator of cognition.

138 Travis Miller, Biomedical Sciences,

Peripartum neurogenesis in forebrain oxytocin receptor knockout mice.

Abstract: Mice with a conditional oxytocin receptor knockout in the forebrain (OxtrFB/FB) express a maternal behavior phenotype wherein many dams abandon their first litters. This keeps with previous work which suggests that oxytocin is important to the onset of maternal care rather than its maintenance. We want to know what oxytocin does to lower the threshold for initiation of maternal care. One possibility is that oxytocin contributes to the way new mothers perceive their pups. Since pregnancy yields increases in neurogenesis within the subventricular zone (SVZ) which helps the olfactory system become responsive to olfactory cues, we wanted to determine if there were differences in neurogenesis in female OxtrFB/FB mice in the peripartum period. We used thymidine analog 5-bromo-2'-deoxyuridine (BrdU), and proliferation marker Ki-67 to measure neurogenesis at gestational days (GD) 7 and 14, and postnatal days (PND) 0, 14, and 21. Sections were labeled for BrdU, Ki-67, and NeuN, and cells coexpressing NeuN and one of the proliferation markers were quantified as a measure of neurogenesis. Our preliminary data suggest that on PND 14 and 21 there are decreased BrdU+/NeuN+ cell counts in the SVZ of OxtrFB/FB mice compared to wild-types; indicating possible genotypic difference in neurogenesis.

139 Lee Gilman, Psychological Sciences,

Optogenetic activation of corticotropin releasing factor neurons in the central nucleus of the amygdala abolishes contextual and cued fear responding.

Abstract: Corticotropin releasing factor (CRF), an important neuropeptide for mediating behavioral and physiological stress responses, is expressed in multiple brain regions including the central nucleus of the amygdala (CeA). The CeA is an established locus for encoding and regulating fear behavior. Based on our CRF-NR1 knockout research we hypothesized that optogenetic activation of CRF neurons within the CeA would inhibit fear expression. Transgenic mice expressing Cre under CRF promoter control were infused with Cre-dependent virus coding for channelrhodopsin

(ChR2) into the CeA. Mice were then trained to associate an auditory tone with an aversive foot shock in context A. Testing occurred 24 and 48 h later in the absence of foot shock in either context A (no cue) or context B (cue), respectively. Stimulation occurred during context testing or during cue presentation in context B. We observed that activation of CeA CRF neurons interferes with fear expression to context and cue. This could be a consequence of downstream inhibition of output neurons in the medial nucleus of the central amygdala involved in fear expression, as most CRF neurons are also GABAergic. Future experiments will investigate optogenetic inhibition of CeA CRF neurons to further characterize the role of CRF in fear behavior.

140 Joseph Lynch III, Psychological Sciences,

Estradiol increases fear generalization through activation of nuclear estrogen receptors and a genomic effect on fear memory retrieval.

Abstract: Generalization is a common symptom of many anxiety disorders and females are 60% more likely to suffer from an anxiety disorder than males. Therefore, one hypothesis for the large sex difference in anxiety disorder rates is that females exhibit higher rates of fear generalization than males. Indeed, our previous data demonstrated that female rats generalize learned fear to neutral contextual cues at a faster rate than males and this effect was mediated by estradiol interactions with memory retrieval mechanisms through activation of ER□. To determine what type of receptors—cytosolic versus membrane—mediate this effect, female rats were given infusions of estradiol and ICI 182,780, an estrogen receptor antagonist, into the lateral ventricle or dorsal hippocampus. Infusions of ICI blocked the estradiol-induced generalization, suggesting that estradiol acts through cytosolic receptors. In a complementary experiment, animals were infused with bovine serum conjugated estradiol (E2-BSA) to test the effects of membrane bound estrogen receptor activation on fear generalization. E2-BSA infusions did not result in generalized responding. These data suggest that estradiol-induced enhancements in fear generalization are mediated through activation of cytosolic, not membrane-bound receptors. Future experiments are aimed to discover the specific mechanisms of estradiol action on fear generalization.

141 Chutarat Akkarawongvisit, Nursing,

Depression and the impact of meditation practiceon Thai undergraduate nursing students.

Abstract: Background: Depression is most common of mental health that can lead to impairments in individuals' ability to take care of themselves. Depression in nursing students leads to loss of profession and a loss of development of public health. Purpose: To discover what has been previous researched and written to the phenomena of depression and the impact of mindfulness meditation practice on Thai

undergraduate nursing students. Method: A systematic search of material published between 1991 and 2012 was conducted with CINAHL, MEDLINE, PubMed, PsycINFO, EBSCO, and Google scholar. Twenty– nine articles met the inclusion criteria. Results: There were 22 English articles and seven Thai articles that associated to the depression, stress, or intervention to reduce stress or depression in nursing student. The articles were written in the United States of America, Europe, and Asia. 22 articles were quantitative studies, five articles were experimental design, and two articles were mixed method. Conclusion: Stress, emotional support, self-esteem and coping strategies play an important role in depression in nursing student. Keywords: depression, nursing student, adolescence and intervention

Doctoral VII

JUDGE(S): Dr. Doug Delahanty, Dr. Yea-Jyh Chen, Dr. Maggie Stedman-Smith

142 Lori Margevicius, Nursing,

A practice change initiative to study the effects of a Herpes Zoster education program on long-term care staff's knowledge.

Abstract: Herpes Zoster is a debilitating illness that affects up to half of all people aged 85 years and older. The Shingles Prevention Study (SPS) demonstrated that the HZ vaccine significantly reduces the incidence of HZ and diminishes postherpetic neuralgia (PHN). Although proven both safe and efficacious, the HZ vaccine is currently underutilized in long-term care (LTC) facilities due to a variety of barriers. This study addressed three barriers to HZ vaccine usage: storage and handling issues, confusion regarding vaccine payer sources, and a knowledge barrier. Data for this study was obtained using a paired t-test to analyze the effects of an HZ educational program on LTC staff's pre- and post-test scores. The voluntary education program was offered to 125 staff members at a private skilled nursing facility (SNF) center in Parma, Ohio (PSNFP); 56 members chose to participate. Results showed that the HZ education program made a statistically significant difference in the staff's test scores ($p < .001$).

143 Jennifer Bryant, Public Health,

Perceived harm of prescription opiate drugs and reasons for misuse.

Abstract: Background: The recent increasing misuse of prescription opiates has been well documented and the effects have had a considerable negative impact to the public health of communities. Researchers have suggested that the perceived safety of misusing these drugs is also contributing to the increased incidence of opiate dependence, overdose deaths, and other related health problems. Methods: An anonymous online survey was developed and distributed to a random sample of undergraduate and graduate students. Participation in the survey was incentivized.

Descriptive and inferential analyses were conducted. Results: A total of 703 surveys were completed with the majority of participants being Caucasian (82%) and female (69.4%). 7.5% reported misuse of hydrocodone/acetaminophen, 3.8% oxycodone/acetaminophen and 2.5% oxycodone controlled-release. Reasons for misuse included to relieve pain, get high and experiment. The general perception of prescription opiate drug danger, ranged from 4.82 to 5.80 on a scale from 1 (very safe) to 6 (very dangerous). Perceived harmfulness of prescription opiate drugs was significantly lower among males compared to females. Conclusions: Perceived harmfulness of prescription opiates is likely a contributing factor misuse ultimately increasing the potential for subsequent opiate dependence. Results suggest that interventions to reduce misuse may need to be tailored to individual population characteristics to be most effective.

144 Diana Mendez, Psychological Sciences,

Using an invisible message to promote sunscreen use.

Abstract: It is important to encourage people to use sunscreen, which can be done with health messages. One problem with traditional health messages is that they sometimes have to convey threatening information, which can lead to defensiveness and ultimate rejection of the message (Sherman & Cohen. 2006; 2007). Self-affirmation theory has been used to counter this defensiveness and increase message acceptance in health messages (Sherman & Cohen, 2006; 2007), but the techniques used in these studies are limited to laboratory use. In an attempt to modify the techniques to reach wider audience, we looked to the invisible support literature. According to this model, providing support in an invisible or subtle way leads to more effective support (Howland & Simpson, 2008), an effect which is thought to be mediated by reduced defensiveness. Therefore, we hypothesized that, compared to a traditional health message, an "invisible" message would lead to increases in acceptance of the health message. To examine this hypothesis, we showed participants (N=209) messages that visibly or invisibly gave information on the benefits of sunscreen use. Participants reported on their acceptance of the information. Results indicated that participants in the invisible condition were more likely to accept the health information ($F(1,207) = 3.89$, $p=.05$).

145 Aimee Smith, Psychological Sciences,

Psychophysiological profile in pediatric pain rehabilitation.

Abstract: Objective: Chronic pain (CP) impairs children's physical, psychosocial, and academic functioning. Treatment of CP accounts for a significant amount of healthcare costs due to extended lengths of stay. Biofeedback (BFB) can be helpful in treating CP through identifying and regulating psychophysiological response to stress. This project will demonstrate the utility of a psychophysiological profile using BFB

protocol to inform pediatric pain rehabilitation treatment. Methods: 14 patients underwent BFB assessment upon admission to 3-week CP rehabilitation program. Data recording patient respiration, heart rate, peripheral temperature, and surface electromyography were compared with existing norms. Treatment data from 2 patients are presented to demonstrate application of BFB assessment in treatment planning. Results: Means and SD for baseline, stressor, and self-guided "relaxation" are reported. This CP sample did not differ compared to normative data. Patients demonstrated stress response as noted by a statistically significant increase in respiration rate. Most patients did not present with relaxation response, with 50% unable to improve respiration rate from baseline to relaxation. Conclusion: BFB is a useful assessment tool for children in CP. The lack of difference between baseline and relaxation epochs suggests a need for further teaching of relaxation skills. Our data suggest BFB can influence treatment and success in rehabilitation. These findings can guide clinicians toward individualized treatment of CP.

146 Julie Schaefer, Public Health,

College curriculum to increases intuitive eating in college students.

Abstract: Weight-related issues (eating disorders, overweight, and obesity) are prevalent in college students, but interventions have achieved little success. To increase effectiveness, researchers suggest focusing on risk factors that are common to all weight-related issues (dieting, body dissatisfaction, thin-ideal internalization). Others suggest that programs should shift the focus from risk factors to promoting adaptive habits. Intuitive eating is characterized by eating according to internal cues and acceptance of the body. The purpose of this study is to decrease shared risk factors and increase intuitive eating in college students through a college curriculum intervention. Students enrolled in the intervention course for a 16-week semester during which they attended lectures, read articles, participated in discussion, and completed assignments. All participants were asked to completed surveys at the beginning of the semester, the end of the semester, and three months following the end of the semester. Compared to the comparison group, intervention students increased overall intuitive eating (β=0.12; p=.0036), unconditional permission to eat (β=0.28; p<.0001), and eating based on internal cues (β=0.15; p=.0175) over time. No differences were observed in disordered eating, body dissatisfaction, thin-ideal internalization, or physical activity over the three time points. This study provides evidence that college curriculum may be a promising approach to promote adaptive eating habits while reaching a large number of young adults.

147 Diana Kingsbury, Public Health,

Effects of a pilot hand hygiene randomized cluster trial to reduce communicable infections among U.S. office-based employees.

Abstract: Communicable diseases, including acute respiratory infections (ARI), influenza-like illness (ILI) and gastrointestinal (GI) infections exact a considerable toll on society each year. The global annual attack rate of influenza has been estimated at 5-10% in adults and costs of communicable diseases are estimated in the billions of dollars. Among disease transmission pathways, hands are known as key points at which pathogens are transferred. Hand hygiene as a disease prevention strategy has been promoted, most notably by the Centers for Disease Control and Prevention, as a method to prevent the spread of infection. The purpose of this study was to determine the effectiveness of an office-based multimodal hand hygiene improvement intervention to reduce self-reported illness and work-related absence. A pilot hand hygiene randomized cluster trial consisting of an electronic training video, hand sanitizer, and educational posters was delivered to office-based employees in a large Midwestern government center over approximately 90 days. Study results indicated a 31% relative reduction in self-reported combined ARI-ILI/GI infections (IRR: 0.69; 95% CI: 0.49-0.98). A 21% non-significant relative reduction in lost workdays was also reported. Findings indicate that an office-based multimodal hand hygiene improvement intervention can result in substantive reductions in self-reported combined ARI-ILI/GI infections among employees.

148 Dana Unger, Lifespan Development & Educational Sciences,

Creating a safe space in counselor education and supervision programs.

Abstract: This poster will increase awareness and discussion regarding multicultural issues in counselor education and supervision. Utilizing existing models of creating safe spaces, presenters will offer a new model for creating a safe zone in counselor education and supervision programs.

Doctoral VIII

JUDGE(S): Dr. Keith Wisdom, Dr. Adam Steele

149 Ashley Johnson, Lifespan Development & Educational Sciences,

Culturally responsive positive behavior support: A model for increasing equity in justice in school discipline.

Abstract: Over the past twenty years, Positive Behavior Intervention and Supports (PBIS) has emerged as a tiered method to provide preventive and intervention related behavioral support to all students, including those with and without disabilities. The cornerstones of PBIS are: prevention, continuous progress monitoring, data-based decision making,evidenced based practices, and the coordination of school activities in

order to sustain positive student and adult behaviors (Sugai & Horner, 2006). Up until recently, dialogue about PBIS suggested that implementation strategies were culturally neutral, and subsequently should be appropriate in all schools. We now know that making this assumption is naïve, as everything in education relates to culture (Erickson, 2009). Subsequently, culture and the way in which students express their cultures should play an integral role in the design and implementation of Culturally Responsive Positive Behavioral Support (CRPBIS) (Bal, Thorious, & Kozleski.) As comparted to a more "traditional" approach to PBIS, CRPBIS is operationalized as a framework that is aimed at remediating school cultures that produce behavioral outcome disparities and marginalization of nondominant students and families (Bal,2011). This poster will explore the research on CRPPBIS.

150 Homood Alharbi, Nursing,

Osteoporosis prevention behaviors in transgender individuals.

Abstract: Purpose: To examine the osteoporosis prevention behaviors (OPB) of transgender individuals (TI). Background: The health care needs of TI are many and complex. Osteoporosis a serious, debilitating age related health care concern. TI may have greater risk for osteoporosis than the general population due to their high risk lifestyle behaviors including, smoking, substance use, decreased dietary calcium intake, sedentary lifestyle, and often unmonitored cross-sex hormone use. Despite TI risk factors, the research is sparse in addressing bone health and osteoporosis prevention among TI. Sample/Method: This is a mixed methods descriptive study. Thirty-one participants age 30 and older completed a survey addressing their OPB (calcium intake and weight bearing exercise). Results: Daily dietary calcium intake ranged from 250 to 800 milligrams a day with a mean of 400 milligrams per day. This is below the recommended daily calcium intake of 1,200 milligrams per day. None of the 31 TI took daily calcium supplements. Daily weight bearing activity ranged from zero to 102 minutes/day with a mean of 29 minutes/day. This is slightly below the recommended 30 minutes a day of weight bearing activity. Conclusion: Engaging in OPB (daily calcium intake, daily weight bearing activity) are important health activities for bone density.

151 Homood Alharbi, Nursing,

Osteoporosis health beliefs in transgender individuals.

Abstract: Purpose: To describe transgender individuals' (TI) health beliefs (susceptibility, seriousness, benefits and barriers to calcium intake, benefits and barriers to weight bearing exercise) about osteoporosis and osteoporosis prevention. Background: The health care needs of TI are many and complex. Osteoporosis a serious, debilitating age related health care concern. TI may have greater risk for osteoporosis than the general population due to their high risk lifestyle behaviors

including, smoking, substance use, decreased dietary calcium intake, sedentary lifestyle, and often unmonitored cross-sex hormone use. Despite TI risk factors, the research is sparse in addressing bone health and osteoporosis prevention among TI. Sample/Method: This is a mixed methods descriptive study. Thirty-one participants age 30 and older completed a survey addressing their perceived health beliefs through use of the Osteoporosis Health Belief Scale. Results: Analysis is currently being conducted using descriptive statistics to determine TI osteoporosis health beliefs (susceptibility, seriousness, benefits and barriers to calcium intake, benefits and barriers to weight bearing exercise). Conclusion: Identifying TI osteoporosis health beliefs may impact TI decisions about health promotion activities for bone health.

152 Heather Flynn, Library & Information Science,

Understanding the experience of international graduate students in their online search activities for academic purposes: A Phenomenological approach.

Abstract: The study analyzed international graduate students' first searching experiences with the Kent State University library and other online resources for graduate coursework written assignments. In Fall 2014, seven participants—all from different national origins, variances in past educational experiences, and from different graduate programs across KSU—were interviewed about their academic information literacy before, during, and after submitting their first major written assignment for classwork in their graduate studies at KSU. Interviews were then analyzed using Heidegerrean hermeneutic interpretation and discussed through dialogical narrative inquiry. Preliminary findings demonstrate a pattern of emerging themes across the students' experiences. These themes include self-awareness, proximity, relational, and professionalism or completeness of information in selection of sources and determination of credibility of these sources. Emerging themes will be discussed through the students' responses and strengthened by past research findings. Findings will not only be discussed in regards to its implications for future research in the information behaviors of international graduate students, but also by pragmatic means of effectively serving international graduate students and diminishing the barriers they experience in finding quality sources of information for their academic needs in both the online library and classroom environments.

153 Jillian Watts, Foundations, Leadership, & Administration,

Disrupting the subtractive identity of black queer faculty on predominantly white colleges and universities.

Abstract: Double consciousness was utilized by Du Bois to explain the reconciliation of dual identity formations of African-Americans: one molded by an African-American identity and etched by a European foundation. For African-Americans that also are within the Queer population, this double consciousness becomes a quadruple

consciousness. Not only do Black Queer individuals have to reconcile their African-American heritage, they have to also attune for living in a heterosexual society while being a member of the Queer population. Black Queer faculty on Predominantly White Institutions often find themselves in academia that does not mirror them, and in response, they because double minorities within their colleagues. While ethnicity is visible to the public, sexuality is often pushed to the margins and upholds an invisible status. This presentation will lay the foundation in understanding the influence of subtractive identity, or removing one's affiliation in the respect of a Black Queer, in the name of upward mobility and assimilation by the review of literature. Also, it will allow for a greater view of how to disrupt this subtraction by allow for additive identity for Black Queer faculty on predominantly white colleges and universities. This has vast implications for faculty retention, promotion, and tenure and creating an inclusive campus.

154 Noraliz Ruiz Caraballo, Music,

Abrazados por el mar: An ethnographic account of the musical collaborations between Puerto Rico and the Canary Islands.

Abstract: Over the last twenty years, musicians from the Canary Islands and Puerto Rico have been in close contact and there is a noticeable effort at representing, creating and appealing to the shared cultural and musical traits of both locations. This poster presentation documents the Puerto Rican Music Week that took place last July on the island of Gran Canaria, Canary Islands. The events included two concerts by the Puerto Rican ensemble Grupo Mapeyé, which is popularly known as Puerto Rico's National Orchestra, playing along with Canarian musicians. Fieldwork in the Canary Islands allowed me to explore the hybridization of contemporary Puerto Rican and Canarian music. Through participant observation and interviews, this research portrays the ongoing cultural exchanges and collaborations among Canarians and Puerto Ricans. This ethnographic project examines an emerging musical phenomenon and its impact in the making of a shared musical community.

155 Kevin Wilson, Music,

Early music of Brazil: A historical outline with emphasis on José Maurício Nunes Garcia.

Abstract: The musical identity of Brazil was the culminating result of years of European, African and Afro-Brazilian influences, as well as the struggle and will power to find its own unique personality and place in the world. Many western musicians do not know about Brazilian music and its composers, other than Heitor Villa-Lobos. It is interesting to see many people identify the music of Haydn, Mozart and Beethoven with ease, but when provided with José Maurício Nunes Garcia's music, it would be difficult for them to identify or mistakenly, identify the composer.

It is said that his craft could actually stand with those European composers of his time. Obviously, it cannot be because of lack of importance or quality. This could be due to the lack of structure in publishing and documentation and politics. This paper will delve into the early history of Brazil, including summaries of the colonial period, its culture and music. Traditional, folk, and Indigenous music will also be briefly examined. Following this historical summary, it will explore the main composers of the periods and the characteristics that they brought to Brazilian music, while focusing specifically on José Maurício Nunes Garcia. This paper is only a brief excursion into the wonderfully rich and diverse culture and music of early Brazilian art music.

156 Amal Al-Alawi, Teaching, Learning, & Curriculum,

Collaborative learning in education: Evidence-based teaching literature review.

Abstract: Problem: Collaborative learning is a strategy used to help prepare health professionals who can work collaboratively with other health care team members. However, it has been frequently used interchangeably with cooperative learning. Despite that they both involve a group of learners working together to achieve set learning goals, some educational scholars argue that they are different and should be implemented and researched differently. Purposes: To (1) distinguish collaborative from cooperative learning, (2) examine elements of collaborative learning, (3) explore appropriate contexts to implement collaborative learning, (4) examine pros and cons of collaborative learning. Search Strategy: Searches performed using CINAHL, ERIC, MEDLINE, PsychINFO, PubMed, databases. Key words included "collaborative learning" or "cooperative learning," and "higher education," "health care education," "elements," "process," "advantages/ disadvantages." Inclusion criteria: research and featured articles, books. Searches limited to English literature. Results: Approximately 277 literature resources initially found. 164 reviewed based on relevance. An excel matrix developed to organize the literature. Four themes identified: (1) definitions of collaborative versus cooperative learning, (2) elements of collaborative learning, (3) contexts to implement collaborative learning, (4) pros and cons of collaborative learning. Implications: Development of EBT to facilitate implementation of collaborative learning is recommended. Since cooperative and collaborative learning differ, research is needed to evaluate the implementation of collaborative learning to offer improvements.

Doctoral IX

JUDGE(S): Dr. Sonya Wisdom, Dr. Brian Barber

157 Hamad Alazzaz, Teaching, Learning, & Curriculum,

Teacher adjustment to a new curriculum.

Abstract: A recent change in the Saudi Arabian educational system introduced a major curriculum reform affecting all levels of public pre-college education. The new system presents a student-centered, inquiry-based approach. Using phenomenology, I will focus on understanding Saudi elementary teacher experience adjusting to this new curriculum.

158 Rajlakshmi Ghosh, Teaching, Learning, & Curriculum,

Envisioning successful teaching by scientific inquiry for diverse learners in the classroom: Insights from preservice special education teachers.

Abstract: This qualitative study explored understandings, practices, views and plans for scientific inquiry as held by preservice special education (SPED) teachers in the context of a general science methods course. Sixteen preservice SPED teachers from four different SPED concentrations (Mild to Moderate educational needs, Mild to Moderate educational needs with Language Arts and Reading [LAR] emphasis, Moderate to Intense educational needs and Early Childhood Intervention) participated in the study. Data was collected from interviews, observations, teaching videos, lesson plans and teaching reflections, and were analysed using grounded theory. Interpretation of the results contribute to the development of a proposed model for teaching about scientific inquiry to future preservice SPED that integrates three components in the contemporary science teaching environment – the teacher, the learner and the SPED/diverse learner component in the classroom.

159 Karly Cochran, Psychological Sciences,

The influence of relationship goals on relationship quality and affective well-being.

Abstract: Previous research suggests that striving toward a romantic partner's best interest strengthens relationships by promoting mutual considerations of each other's welfare over time (Rusbult & Van Lange, 2003). The current research examined how the proportion of one's goals that focused on a romantic partner (relationship goals) influenced relationship quality and well-being over time. Data were collected from eighty newly-dating couples (N = 160) at three time points (an initial intake session with 3- and 6-month follow-ups). In addition to completing a series of relationship and well-being measures, participants were asked to list six goals they typically pursued in any life domains. Results showed that higher proportions of relationship goals at Times 1 and 2 predicted decreased positive affect, relationship satisfaction (Time 1, n.s.), and commitment at Time 3. Higher relationship goal proportions at Time 1 also

predicted increased thoughts of breaking up at Time 3. Relationship goal proportions did not predict a change in negative affect or life satisfaction over time. Previous conclusions about the benefits of relationship goals have been limited to their appetitive qualities. The current findings present important implications for the quantity of partners' relationship goals and ways in which they strive toward a better relationship.

160 Lindsey Matt, Psychological Sciences,

The stability of negative affect differentiation in emotional disorders across contexts.

Abstract: Administration of nomothetic and idiographic emotion modulation tasks in a clinical sample revealed that negative affect differentiation remained stable across contexts. Evidence of stability in this construct in clinical samples has implications for both the understanding of emotional processes and relevance for interventions.

161 Emily Mupinga, Lifespan Development & Educational Sciences,

Experiential learning at the village of hope.

Abstract: With an estimated 15 million AIDS-related deaths in Africa since the emergence of the disease, over 14 million orphans have been left in its wake (WHO, 2013). Evidence from literature indicates that orphans are plagued with emotional trauma following parental loss and experience both physical and psychological difficulties due to lack of emotional, social, and financial support (Lenz, 2011; WHO; UNICEF, 2013). The burden of care is placed on ill-equipped aging relatives, older siblings, or caregivers in local orphanages who, unfortunately, lack resources to help the needy children. The situation is compounded by the shortage of qualified mental health professionals for the mainstream Zimbabwean population (Avert, 2011). This poster presentation will reflect on the experiential learning project done at the Village of Hope in Zimbabwe between mid June and early July, 2014. Experiential learning is a process through which students develop knowledge, skills, and values from direct experiences outside the traditional academic setting (Loretto, 2011; Kolb & Kolb, 2005; Roberts, 2006). Research has given evidence that integrating learning and experience significantly increases the depth and breadth of comprehension and knowledge retention (National Research Council, 2008).

162 Michael Varga, Liquid Crystal Institute,

A solution to the community parking dilemma.

Abstract: We propose a computational method to optimism the way a university population has access to parking privileges. The goal of minimizing any select persons daily on-campus trek is realized by a Monte Carlo method using Kawasaki dynamics. Within the current system, parking assignments are chosen directly by the purchasers, a process subject to many shortcomings due to indecisive and/or misinformed users.

Using a priority based cascade of "lotteries", our method attempts to achieve the shortest total daily on-campus compute for all university students, faculty, and employees simultaneously. The situation addressed is subtle at Kent State in contrast to large urban universities, where parking privileges are scarce and highly sought after, that would greatly benefit from an effective parking assignment protocol.

163 Amber Rochette, Psychological Sciences,

Gender is associated with memory task performance in older adults with heart failure.

Abstract: Neurocognitive deficits are found in up to 80% of heart failure (HF) patients and are associated with poor outcomes and diminished health-related quality-of-life. Though it is known that women perform better than men on memory tasks in the general population, this has not been explored under the context of HF and could have significant clinical implications. This study examined the relationship between gender and cognition in a sample of older adults with HF. 189 older adults with HF completed a neuropsychological test battery to assess functioning in attention/executive and memory. After controlling for demographic and medical factors, MANCOVA revealed women had better memory performance [$\lambda = 0.9$, $F(4, 180) = 5.00$, $p = 0.01$]. Posthoc tests revealed better performance on CVLT Learning, Short Recall, and Delayed Recall ($p<.01$ for all). Men and women did not differ on tests of attention/executive function [$\lambda = 0.96$, $F(5, 172) = 1.34$, $p = 0.25$]. Results suggest that HF is associated with greater memory impairment in men than women, though no differences emerge in attention/executive function. Future studies are needed to determine the mechanisms for this pattern and examine whether gender-specific clinical management of HF may improve outcomes in this high-risk population.

Doctoral X

JUDGE(S): Dr. Sanna Harjusola-Webb, Dr. Kelly Cichy

164 Rachael Todaro, Psychological Sciences,

Interleaving across contexts.

Abstract: There is already evidence supporting the use of multiple, similar contexts (Vlach, 2011) and interleaved practice (Rohrer, 2012) for promoting learning and transfer of knowledge independent of one another. However, little is known regarding the effect of presenting multiple contexts combined with interleaved problems. We seek to examine the effects of distributing interleaved problems across multiple yet similar contexts. The current study seeks to examine the interaction of interleaved practice of two math skills (solving for area and perimeter) across four different problem types (four geometrical shapes) placed in two different contexts (outdoor/indoor renovations). The study will compare traditional blocked practice, interleaved practice (interleaved-by-math skill or by context), and super-interleaved

practice (interleaved-by-math skill and context). It is anticipated that students who are randomly placed in the interleaved-by-context and math skill condition will outperform those in the interleaved-by-math skill condition and interleaved-by-context condition. Further, it is also expected that the students in the blocked-by-math skill and context condition will not perform as well as the experimental conditions. The results will offer educators and educational psychologists alike more insight on whether applying interleaved practice combined with context will be detrimental or beneficial toward mathematical knowledge retention.

165 Rashmi Singh, Teaching, Learning, & Curriculum,

Scaffolding through questioning enhances student's understanding of mathematical proof concept: A discourse analysis of teacher-student communication.

Abstract: When mathematics is taught using prescribed instructions (step by step), by teachers as dominant subject experts, students often fail to gain a good understanding of a complex mathematical content. During instruction teachers often ask questions with known answer/answers followed by short student responses and the evaluations of these responses often result in false projections of students' conceptual understanding.On the other hand scaffolded instruction provides the opportunity for students to develop their independence, sense making and self-confidence whilst working mathematically Questioning, as a scaffolding technique, has its unique importance as it can be used by teachers not only to get information about their student's conceptual understanding but it also provides a mean for teachers' to guide students' progress without providing direct support in terms of detailed step-wise solution to problems. The purpose of this study is to find the evidence that if the teacher used scaffolding as questioning during her instruction in a real classroom settings and how often she used it to support her instruction and most important what is the effect of using scaffolding as questioning on student's understanding of geometric proof.

165 Sebiha Balci, Lifespan Development & Educational Sciences,

Badges versus goals: What really predicts learning?

Abstract: Achievement goal orientations (AGO) are known to be effective tools to increase student achievement. Whether badges, digital credentials which show people's skills and accomplishments, could also be effective tools to increase learning and motivation of students is the focus of our study. This study investigates whether badges or student achievement goals is more effective at student learning and motivation. For the current research, undergraduate students will be placed into four groups: (1) the badge condition where badges are presented in reward for achievement, (2) the goal condition where goals are presented, (3) the badge and goal condition where both badges and goals are presented, (4) the control group no badges

or goals are presented. An AGO questionnaire and a pretest about the topic of instruction will be given at the beginning of the study. Then, six online learning modules will be provided to the participants. The modules will start with a built in presentation of badges and/or goals based on group assignment. Quizzes and post-tests will be conducted at the conclusion of the learning modules. Learning will be measured by the achievement gains between the pretest and posttest and the delayed posttest. Although the current research is still in data collection phase, implications for this research will help to define effectiveness of badges on learning.

167 Omer Farooq, Library & Information Science,

Learning theories and information literacy instruction in virtual learning environments.

Abstract: In virtual learning environments, students interact with information in a multitude of ways. Some prefer to read text-based course content, while others prefer to listen to lectures and podcasts or watch visual demonstrations. This poster presentation illustrates the role of different learning theories in the context of information literacy (IL) instruction in virtual learning environment (VLE). This research suggests that IL practitioners need to be aware of not only different variations of learning styles, but also different learning theories that facilitate the understanding of student behavior.

168 Jennifer Toney, Teaching, Learning, & Curriculum,

Third grade comic club: Student experiences.

Abstract: During this session the presenter will present a poster of her 2015 study "Third Grade Comic Clubs: Student Experiences". The poster will display background information and participants will be invited to complete a short survey on their experiences with using graphic novels in the classroom. In addition, the poster will present the study's methodology as well as the findings and implications. Attendees will also have the opportunity to peruse a variety of graphic novels, student recorded surveys, and third grade readers' notes read and developed throughout the course of the study. Through this presentation, attendees can expect to gain an understanding of third grade readers' experiences and perceptions on reading graphic novels to comprehend and discuss text. Participants will have an opportunity to see authentic student work related to reading and discussing graphic novels. The implication of this information is to provide elementary educators and teacher educators with research to support the use of multimodal texts for differentiated student learning and joyful learning engagement.

169 Ilfa Zhulamannova, Teaching, Learning, & Curriculum,
Storytelling.
Abstract: This presentation on Storytelling aims to share the project that has been conducted in a preschool classroom over seven weeks to stimulate children's dramatic play. It highlights how the classroom teachers invited all the families to share stories important to them. Several folk stories, were presented to the children in Chinese, Russian, Arabic and Somali. One of the outstanding features of the project is how the stories were presented using flannel board, puppets, shadow theater, finger play and drama. These became wonderful mediation tools for parents who had limited English skills. In addition this experience inspired children to engage in pretend play and create their own stories. Weaving the preschool curriculum story with children where each child's voice is included is a great way to create an inclusive and culturally responsive classroom. This project helped to bring the children's stories to the middle and build upon their interests and individual backgrounds. It made the learning and teaching meaningful for both the children and the adults. Storytelling helped to bridge a classroom with the outside world – the families and the community – and welcome all parents to be a part of the educational process of their children.

170 Haifa Aljabreen, Teaching, Learning, & Curriculum,
An overview of Saudi Arabian early childhood education: Meeting the needs of Saudi children.
Abstract: The presentation will place ECE in a Middle Eastern cultural context and will consider the fifty-year history of the preschool movement in Saudi education. The religious basis for all Saudi education will be identified and summarized. Based on both English and Arabic resources, the presentation will analyze the educational objectives and development of an early childhood education program, sharing the following details: family/career influence on Saudi ECE, multi-agency support and governance of Saudi ECE, ECE teacher preparation, Saudi ECE curriculum, challenges and difficulties in Saudi ECE. This research is foundational to the researcher's goals of investigating the historical and current educational policies as a way to determine future possibilities for improved teamwork between the multiple organizations, educators, parents, and preschoolers in this developing nation. Learning from the past, neighboring countries, and more developed and tested methods in the U.S. will assist in providing the Saudis with ideas to serve all families and educate all young children in the Kingdom.

Oral Presentations: Session 2 • 11:00 AM - 12:30 PM

Meaning, Value, & Identity

Ballroom Balcony

JUDGE(S): Dr. Rachael Blasiman, Dr. Fashaad Crawford, Ms. Virginia Little

11:00 William Weaver, Journalism & Mass Communication,

The phenomenology of value.

Abstract: The term "value" is a common feature of contemporary conversations—from ethics, to politics, to marketing, to economics. However, research (both contemporary and historical) into what is exactly meant when we use the word "value," as well as the experiences, expectations, and communication outcomes associated with it, has been limited. Is there a direct experience of value? Or is the word "value" simply a label that we apply to collections of other discrete experiences? The philosophical and methodological discipline of phenomenology offers a means to test these questions. By investigating phenomena at the level of their lived experiences (rather than retrospectively within their surrounding contexts), phenomenology allows the question of value to be explored in the moment of social encounter. A pilot study was conducted, engaging a small sample of philosophers and business professionals in phenomenological in-depth interviews to explore the lived experience/encounter with value. Results suggest that value is largely experienced and recognized (particularly in a business context) as a sense of mental, emotional, and physical relief that accompanies accomplishment of an objective or positive conclusion of a social episode. This tendency for value to be experienced in its negative spaces offers ground for discussion and further communication research.

11:15 Brooke Long, Sociology,

Multiple counter-normative identities: An empirical test of competing hypotheses.

Abstract: Since James (1890), social psychologists have recognized the existence of multiple identities. Two main theoretical arguments regarding the accumulation of identities exist. The first, developed out of role theory, expects that individuals who obtain multiple role identities will experience role conflict and role overload or strain. These experiences are predicted to produce a number of negative physical and mental outcomes. The second, termed role accumulation theory, argues that obtaining multiple role identities can give individuals purpose and meaning, and can have positive effects on their health. Previous work regarding the accumulation of identities has focused on normative, positively evaluated roles. This presentation will examine these competing ideas in terms of the accumulation of multiple counter-normative identities; identities that are negatively evaluated by society. The goal will be to examine the impact of claiming multiple counter-normative identities on individual's

self-esteem, mastery, depression, and anxiety using a nationally-representative web-based panel.

11:30 Cadey Korson, Geography,

Self-determination, national identity, and reconciliation in the New Caledonian independence debate.

Abstract: This research investigates the role of identity, economic dependency, and competing visions of self-determination in the political devolution of a French territory. New Caledonia, an island nation in the Pacific is the last remaining UN Non-Self-Governing Territory of France and the most populated of the sixteen remaining territories. According to an agreement signed in 1998, beginning in May 2014 New Caledonia will be entering the last stage of power devolution from France. This process will culminate in three referendums to determine whether New Caledonia becomes an independent or French associated state. Although small and geographically isolated, New Caledonia's political transformation has global ramifications for policy makers and sub-state groups struggling to resolve issues of political participation, recognition, and self-determination.

11:45 Brian Don, Psychological Sciences,

Purpose in life trajectories from middle to older adulthood.

Abstract: Purpose in life, or the feeling that life has direction and is characterized by meaningful pursuits, has received a good deal of attention in the psychological literature, as prior research has demonstrated purpose is associated with better mental and physical health. What is less clear, however, is how individuals experience changes in purpose across the lifespan. Although cross-sectional research has demonstrated that old people tend to report lower levels of purpose in life than middle-age or young people, prior research has not examined intra-individual change trajectories in purpose across time. The goal of the current study, therefore, was to examine whether individuals experience declines in purpose in life from middle-age to older adulthood. To do so, we drew upon three waves of the Wisconsin Longitudinal Study, which is a large, longitudinal cohort study, to examine purpose in life trajectories from ages 52 to 75. Results of growth curve analyses indicated that, on average, individuals experienced moderate declines in purpose from middle to older adulthood. Yet, we also found significant individual variability around this average trajectory, and we identified a number of factors which predicted resilience to this average pattern of declines, including demographics, social relationships, mental health, physical health, and religiosity.

12:00 Sureeeporn Suwannaosod, Nursing,

Hope and spiritual well-being in adolescents with cancer: An integrated review.

Abstract: Background: Adolescents with cancer are faced with several challenges. They are developing their identity and forming moral and spiritual pathways to lead them into adulthood while struggling to cope with the presence of cancer. Healthcare professionals cognizant of an adolescent's hope and spirituality may be more effective in facilitating optimal health outcomes. Purpose: The purposes of this integrative review were to explore how adolescents with cancer perceive hope and spiritual well-being, to determine what conceptual frameworks and empirical indicators are used in this area of inquiry, and to determine factors that can influence hope and spiritual well-being. Method: A systematic search of material published between 2004-2014 was conducted with PubMed, PsychINFO, CINAHL, ATLA, and religion and philosophy collection. Nineteen articles met the criteria. Results: Adolescents with cancer perceive hope and spirituality as a positive coping strategy. Empirical indicators included the Adolescents Hopefulness Scale, Herth Hope Index, and Spiritual Well-Being Scale. Conceptual frameworks included the Adolescent Psychosocial Adaptation to the Cancer Experience Model and Adolescence Self-Sustaining Model. Gender, stage of adolescence, and time since diagnosis were associated with hope and spiritual well-being. Conclusion: Hope and spirituality play an important role in adolescents with cancer. The majority of the articles contained no theoretical framework. The association between hope and spiritual well-being needs to be further explored.

12:15 Mark Rhodes, Geography,

A Paul Robeson philosophical framework for academic application: Trans-scalar, transcultural, and transdisciplinary approaches.

Abstract: Paul Robeson was one of the most well-known figures in the twentieth century. As a pro-athlete, a Hollywood star, a Broadway actor, a distinguished scholar, and a vivant activist, he has the potential to be a rising star philosophically within academia. Having a philosophy revolving around anti-colonialism, human rights, and socialism, Robeson as both a philosopher and an individual can be studied, applied, and utilized. As a trans-scalar individual Robeson strengthened and connected identities. Within our educational system these connections can be utilized to promote heightened cultural competence and tolerance within students. And within academia, transdisciplinary approaches are increasingly the goal for research and programs. Especially within geography, as the Pan-African ideologies of DuBois and Fanon are being applied to issues of food access and social injustice, Robeson's philosophies of labor, equality, and sovereignty can be applied to pressing issues such as racial violence, labor exploitation, wealth inequality, and neocolonialism. In a case study of Wales, I provide an example of how Robeson is used transdisciplinarily to address an

increasingly racially divided society, deliver a unique local perspective of history, and connect Wales to larger international movements.

Business & Leadership

Room 307

JUDGE(S): Dr. Pratim Datta, Dr. Claudia Gomez, Dr. Eric Pempus

11:00 Paul Mills, Business Administration,

Pull mobile coupons: Scanning for discounts at the first moment of truth.

Abstract: How mobile devices can play a role in retail marketing through the distribution of mobile coupons is of interest to researchers, manufacturers and retailers. Prior research has focused on coupons that are "pushed" to consumers (i.e., where the marketer initiates coupon selection and delivery). Our research will investigate an alternative mechanism we term "pull coupons" in which the consumer initiates coupon selection and delivery by scanning grocery items at the shelf using their Smartphone. Upon scanning, the consumer is presented with coupons for the scanned product and for related products as well. A field experiment in a grocery store setting allows us to collect data over time comprised of scanning, brand, and quantity decisions, as well as coupon information. The experiment will provide valuable information to brand managers, manufacturers, and retailers about the determinants of browsing, product scanning in-store, and redemption of mobile coupons. We will explicitly model the consumers' decision to scan a product to receive mobile coupons, and investigate the joint determinants of brand choice and quantity purchased conditional on their scanning behavior. This data will provide one of the first opportunities to observe longer term trends in snap coupon redemption and changes in shopping behavior over time.

11:15 Sunbong Jung, Business Administration,

Geographic and business line diversification and the mix of debt and equity issuance.

Abstract: In this paper we study the relation between debt issuance decisions and both geographic and business line diversification for a sample of Compustat firms during the period 1984-2012. In our tests we allow for different behaviors based on economic conditions and a firm's financial constraint status. Our results are generally consistent with previous studies that find that diversified firms choose less debt. However, our results also show that this conclusion must be modified by considering economic conditions and a firm's financial constraint status. The negative relation between debt issuance and diversification is driven by results during economic expansions. During economic contractions the relation is not statistically significant. Moreover, we find a positive relation between business line diversification and debt issuance for financially constrained firms. We conclude that studies of capital structure must be careful to

consider time varying economic conditions and firms' financial constraint status before drawing broad inferences about relations between firm characteristics and capital structure.

11:30 Puneeth Kumar Jethwa, Digital Science,

Management and leadership.

Abstract: Management and leadership has, over the years, become the satirical ingredient in organisational surmise and wont. From its earliest conceit and as studies of these practices developed, professionals occupying these positions experienced many changes. The profession of social work was no stranger to organisational instability; though ambivalent about the practice of management and leadership. This study therefore argues that an understanding of management and leadership will equip social work managers and leaders to attain organisational goals. This paper examines cultural and leadership variables associated with corporate social responsibility values that managers apply to their decision-making.

11:45 Jason Murdock, Visual Communication Design,

NASA as a leader & innovator.

Abstract: In the midst of waning interest among younger generations, and increasing competition from private companies, we use a mix of qualitative design methods in search of an answer to the question: how might design help NASA secure its place as a leader and innovator in the minds of members of the millennial generation?

12:00 Philip Shackelford, History,

Silent mavericks: The U.S. Air Force Security Service and Signals Intelligence in Cold War national security.

Abstract: The U.S. Air Force Security Service (USAFSS) was a particularly energized and proactive signals intelligence organization established both to make the U.S. Air Force a competitive member of the post-World War II U.S. intelligence community as well as to provide an early warning system to prevent a nuclear surprise attack. The USAFSS accomplished this with an intense dedication to mission, a focus on technological proficiency, and a commitment to recruiting only the top-scoring Air Force enlisted airmen. Using a unique combination of correspondence, official Air Force and other government documents, this paper will argue that the USAFSS was able to lay the groundwork for subsequent intelligence agencies, such as the NSA, by constructing a widespread and highly secret empire of intelligence resources all around the world.

12:15 Megan Shaeffer, Sociology, *Becoming an Archaeologist: Professionalization in the Applied sciences.*

Abstract: This paper explores how archaeologists are prepared for the realities of their profession. I examine the social and political forces that affect the practice of archaeology at the professional level, ethical concerns that face archaeologists today, and the future archaeological research. My study is qualitative in nature, using both participant/observation and interviews. During the summer of 2014 I took part in an archaeological field school, which allowed me to interact with students of archaeology and observe the professionalization process as it occurred. I am currently interviewing students, academic archaeologists, and cultural resource management archaeologists to learn about how and when professionalization occurs as well as the acquisition of the technical and normative knowledge necessary to the profession.

Local Studies

Room 309

JUDGE(S): Dr. Jim Bracken, Dr. Sarah Smiley, Dr. Scott Sheridan

11:00 Jennifer Burrell, Geography,

Can environmental and societal factors determine the status of neighborhoods in Youngstown, Ohio?

Abstract: The City of Youngstown, OH finds itself in the position of trying to recover from economic collapse at the same time of trying to slow further economic decline. Efforts to reduce crime, gang activity, and drugs within the city have led to more greenspace including urban gardens, more accountability in the maintenance of rental and vacant properties, as well as introducing new commerce to the city. The impact from these measures is difficult to quantify. Presented here is an examination of neighborhoods in Youngstown where different environmental and societal factors are mapped over a three-year span to see if neighborhood change can be measured and documented through mapping alone. Factors such as maintained properties, new businesses (such as grocery stores), location of schools, and presence of playgrounds will be used as proxies to determine the "recovery" of Youngstown.

11:15 Krystal Levstek, Geography,

An institutional analysis of Northeast Ohio's regional bus transportation systems throughout rural and urban service areas.

Abstract: The accessibility of regional transportation bus systems is a complex management system issue that must address all organizational and social institutional boundaries that supports an important public service. I investigate the challenges and stressors on local regional bus systems and why they exist outside of their metropolitan and city boundaries. The counties of Summit and Portage contain cities

of various sizes leading to the connectivity of both urban and rural spaces. The regional bus system faces inherent problems and challenges of service when exaggerated among nonurban areas due to limitations of organizations governance and the common institutional practices. The low density populations served by public transit can create greater barriers to an already financial strapped system, causing a spatial mismatch of service to need.

11:30 William Kelvin, Journalism & Mass Communication,

Kent State Recycling Survey.

Abstract: An online survey was distributed to students, staff and faculty at Kent State to gauge their self-reported recycling habits and underlying attitudes. The goal of this applied research was to improve the Office of Sustainability's recycling outreach efforts. However, there was also a theoretical component to the research, as the survey measured environmental attitudes and environmentally responsible behaviors, in order to look for statistically significant links between attitudes and relevant behaviors.

11:45 Zhuo Chen, Geography,

Geography of social media: A look at geographic and temporal trends of the April 2nd shooting incidence at Kent State University.

Abstract: A Kent State University freshman prompted a campus lockdown on Wednesday (4/2/2014) night when he shot himself in the hand during a domestic dispute on Kent State campus. No one was injured. News of the April 2nd's shooting on Kent State University's Kent campus spread quickly on social media. Reactions to shooting are vital to campus safety. Using programmed tweet search tools and geospatial technology, we analyzed spatial, temporal and textual content of tweets concerning this incident. We first collected tweets with the keywords from locations within 120 miles from the site. While we wish incidents such as the April 2nd shooting had never occurred, the proliferation of social media outlets and their uses have given us a new way of seeing how people reacted to such events and how people communicated related information. The geography of tweeted messages shows the locations where people cared about this incident. The temporal pattern of tweets shows how concerned people were about the incident. Tweets about the shooting appeared much earlier than announcements made by Kent State Police or Kent State University. Such tweets proved to be of great value in informing students and residents of such event which might have prompted them to seek shelters or to engage in other safety measures.

12:00 Sunita Shakya, Public Health,

Elevated blood lead levels among refugee children resettled in Northeast Ohio, 2006 – 2012.

Abstract: Lead is a toxic metal, exposure to which can lead to damage of multiple organs and body systems. The objective of this study is to estimate prevalence of elevated blood lead level (EBLL) and to access potential risk factors for EBLL among refugee children resettled in North-east Ohio from 2006 to 2012. Data for the study was extracted from hospital electronic medical records of refugee children (0 to 18 years of age) who visited outpatient clinic of ACH. BLL level was looked in both continuous and discrete scale. BLL > 5 µg/dl was categorized as elevated BLL Overall, 8.07% of the refugee children had EBLL. 22.5% of refugee children had detectable level of lead in their blood sample with mean BLL of 4.35 µg/ dl + 2.37 (SD). Being a male [OR: 2.05, C.I:1.13 – 3.72], of age group 3 to< 6 years [OR: 2.94, 1.35 – 6.41] and of Bhutanese ethnicity [OR: 8.06, 1.03 – 63.25] or Karen [OR: 9.38, 1.25 – 70.52] increased the likelihood of having EBLL. Having intestinal parasite or Anemia was highly associated with EBLL among children. Refugee children are at higher risk for EBLL and findings of this study would help in addressing the health care needs and designing prevention program for the resettled refugee children.

Cellular Mechanisms

Room 310A

JUDGE(S): Dr. Soumitra Basu

11:00 Debmalya Bhattacharyya, Chemistry & Biochemistry,

A G-quadruplex forming domain in the IRES A of the hVEGF folds independently and directly recruits 40S ribosomal subunit.

Abstract: RNA G-quadruplexes (GQ) are non-canonical secondary structures known to be involved in modulation of several biological processes such as mRNA transcription, translation, mRNA editing, miRNA biogenesis, splicing amongst others. The GQ structures when present in an IRES (Internal Ribosomal Entry Site) act as essential element in contrast to their generally accepted inhibitory role in translation when present within the 5'-UTR of mRNAs. We discovered a 17 nucleotide independently folding RNA G-quadruplex (GQ) domain within the 294 nucleotides long human VEGF IRES A that directly interacts with the 40S ribosomal subunit. Footprinting and structure mapping analyses indicate that the RNA GQ forms independently and also interacts directly with the 40S ribosomal subunit in absence of other protein factors. Furthermore filter binding assay in conjunction with enzymatic footprinting clearly established that the GQ forming domain singularly dictates the binding affinity and also the optimal function of the IRES A. Additionally, the deletion of the GQ domain abrogates the 40S ribosomal subunit binding to the IRES,

which impairs the cap-independent translation initiation. The findings provide a unique and defined role of a non-canonical RNA structure in the cap-independent translation initiation by cellular IRESs. The results from this study explain the hitherto unknown mechanistic necessity of the GQ structure in IRES function.

11:15 Jagat Budhathoki, Physics,

Mechanistic insight into unfolding of G-Quadruplex by bloom helicase.

Abstract: G-quadruplex (GQ) structures may result in genomic instability unless they are destabilized by proteins. Bulk biochemical studies have shown that Bloom helicase (BLM) unfolds both intermolecular and intramolecular GQ in the presence of ATP. Using single molecule FRET, we show that binding of BLM to ssDNA in the vicinity of an intramolecular GQ leads to unfolding of the GQ in the absence of ATP. We show that the efficiency of BLM-mediated GQ unfolding correlates with the binding stability of BLM to ssDNA overhang, as modulated by overhang length and directionality. These results are surprisingly similar to those obtained on interactions of ssDNA binding protein Replication Protein A with GQ, which also does not require enzymatic activity to unfold GQ. These similarities point to common features of GQ destabilization mechanisms of helicases and ssDNA binding proteins, in which binding of the protein is what initiates and in some instances is adequate to unfold the GQ. Furthermore, we studied GQ unfolding by BLM in the presence of ATP which resulted in a significantly higher unfolding efficiency compared to the absence of ATP. However, BLM did not unfold GQ many times before dissociating from the DNA, which is in contrast to Pif1 helicase.

11:30 Rebecca Curry, Biomedical Sciences,

Understanding the role of dorsal nucleus of the lateral lemniscus neurons in the avian interaural level difference circuit.

Abstract: The central auditory system computes horizontal sound location through binaural cues such as interaural level difference (ILD). In birds, the first nucleus encoding ILD is the dorsal nucleus of the lateral lemniscus (LLD). Previous work in birds has shown that LLD neurons receive excitatory input from the contralateral nucleus angularis (NA), as well as a reciprocal inhibitory input from the other LLD. However, little is known about the specialized morphological and physiological properties of LLD neurons that enable them to encode ILD. Whole-cell patch clamp experiments were used to measure intrinsic and synaptic properties of LLD neurons in brainstem slices (300 μm) prepared from late chicken embryos and early hatchlings (E17-P5). Cell morphology was revealed through biocytin and Lucifer yellow staining. Multiple firing patterns of LLD neurons were observed and were broadly classified as either onset or tonic firing. Morphology also differed among neurons; onset firing neurons had few, short dendrites, and tonic firing neurons had either

bipolar or multipolar dendrites. Additionally, stimulation of the contralateral LLD elicited inhibitory postsynaptic currents in some ipsilateral LLD neurons. Identification of the different LLD cell types will allow us to test whether the tonic firing neurons encode the ILD through integration of excitatory and inhibitory input and if the onset firing neurons provide the reciprocal inhibitory input.

11:45 William Hamlet, Biomedical Sciences,

Uncovering GPCR modulation: Mechanistic and functional implications.

Abstract: Nucleus laminaris (NL) neurons of the chicken brainstem encode the location of sound in horizontal space by employing strong voltage-gated K+ (KV) currents to tightly control the threshold and timing for action potential generation. Group II metabotropic glutamate receptors (mGluRs) have been examined in the NL but results have not revealed modulation of KV currents, possibly due to dilution of intracellular signaling cascades in whole cell recordings (WCR). Our goal was to determine whether group II mGluRs (mGluR II) modulate KV currents and produce corresponding changes in the firing properties of NL neurons. Using perforated patch clamp recording (PPCR), activation of mGluR II (mGluR II) resulted in an increase KV current. Activation of mGluR II revealed narrower action potentials leading to and improved ability to follow high frequency stimulation with temporal precision. Importantly, these data imply that dynamic enhancement of KV currents via mGluR II improves the ability of NL neurons to follow high rates of stimulation. Furthermore, these data that careful examination of GPCR modulation may require the use of PPCR.

12:00 Gayan Mirihana Arachchilage, Chemistry & Biochemistry,

A non-canonical RNA structure regulates microRNA biogenesis.

Abstract: MicroRNAs (miRNAs) are an important set of short RNAs that are capable of regulating more than one half of human gene expressions. The biogenesis of miRNAs is a tightly regulated process as the elevated levels of mature miRNAs are often linked to various diseases including cancer. The cleavage of precursor miRNAs (pre-miRNAs) by the enzyme Dicer to produce mature miRNAs is a critical step during its biogenesis. The current dogma is that all the pre-miRNAs adopt a characteristic stem-loop structure, which is required for the accurate cleavage by the enzyme Dicer. However, after analyzing all the known human pre-miRNA sequences we discovered that about 16% of pre-miRNAs can adopt a different secondary structure known as G-quadruplex (GQ) as an alternative to the canonical stem-loop. Using a clinically important miRNA (human miRNA 92b) we showed that the GQ structure inhibits the pre-miRNA maturation both in vitro and in vivo. The GQ secondary structure present in the pre-miRNAs can potentially be targeted for drug designing against various diseases. The discovery of the presence of this alternative

structure in pre-miRNAs adds a new dimension to our understating of the structure-functional relationship of miRNA biogenesis and identifies a novel role for the GQ.

Health & Wellness Across the Lifespan

Room 310B

JUDGE(S): Dr. Vinay Cheruvu, Dr. John Updegraff

11:00 Samantha Jones, Lifespan Development & Educational Sciences,

More than just parents: The importance of siblings as supportive others during the transition to college.

Abstract: College dropout appears to be a prevalent problem in today's society. Previous research has examined ways parents and peers can serve as support for college students, and that this support protects against college dropout. However, few studies examine ways in which sibling relationships can be supportive for college students during this transition, and potentially serve as a protective factor for college dropout. Thus, the purpose of this study is to examine the importance of sibling support for college students' well-being. It is possible that siblings may be able to provide a sense of support that is perhaps less accessible from family and friends. It is also possible that if a student feels supported by their siblings emotionally and academically, they may hold higher educational aspirations and expectations for completing their degree. The current study will utilize a one-time online survey of undergraduate students at Kent State University. Participants will complete a survey measuring demographics, academic aspirations and expectations, academic self-efficacy, sibling support (emotional) and sibling support (academic). T-tests, correlations, and linear regression will be utilized to examine potential differences in sibling support based on generation status, and family composition, as well as examine academic aspirations and expectations, and academic self-efficacy.

11:15 Susanne Mitchell, Public Health,

Adolescent mental health & related issues in prevention science.

Abstract: Mental health issues such as anxiety, depression, and suicide are important public health issues that warrant attention due to the vast medical and social burdens associated with them. Although data suggests that some mental health issues may be prevented and mitigated with screening and early interventions for childhood emotional problems, approximately one in five children will access needed services. This presentation will describe the various mental health care service delivery systems for children and adolescents and explore why the majority of children in need of mental health care services do not access them. Issues to be discussed include stigma, the role of the media, awareness campaigns, and preventative interventions. Future

research directions will also be discussed in regards to addressing health disparities in mental health care access and utilization for children and adolescents.

11:30 Shawn Starcher, Journalism & Mass Communication,

Depression: Keeping it in the family.

Abstract: Depression is ubiquitous and has a heavy influence in many situations, including the family environment. There are many problems that families deal with when one of the family members struggles with depression. For the individual with the depression, one of the main struggles is disclosing their diagnosis with other family members while seeking social support or understanding from the family. For individuals that have a family member that is struggling with depression, it is often a stressful experience when hearing that their loved one has been diagnosed with depression and then being burdened with the additional responsibilities of taking care of the individual when bouts of depression occur. Children and adolescents, depending on age, may also struggle with the information that a parent is suffering from depression. Sharing with a child may feature more problems than openly sharing with an adult. How families cope and deal with these issues can have a significant impact on the individual suffering from depression as well as the family unit as a whole.

11:45 Meghan Novisky, Sociology,

End of life care planning among older, incarcerated men: What matters?

Abstract: With the collision of the "prison boom," the "graying" of the prisoner population, the generally poor health of inmates as a group, and mounting strains on corrections budgets, the issue of how to best meet the end-of-life care needs of aging prisoners is a serious problem corrections administrators are grappling with nationwide. One aspect of end-of-life care is advance care directive planning. Advance care directives provide instructions on how an individual would like to receive medical treatment at the end of life. The purpose of this project is to understand what older inmates need in terms of medical treatment at the end of life and how administrators can address these needs in a way that is driven both by standards of quality care and cost-efficiency. This is the first study to analyze how social support, expectations regarding aging, death distress, and trust in prison healthcare staff influence inmate preferences for end-of-life care. Data is drawn from 280 survey-led interviews with older men incarcerated across 3 prisons in Pennsylvania.

12:00 Nancy Woolverton, Lifespan Development & Educational Sciences,

Heart to heart – life after a cardiac event: A couples approach to health and well-being.

Abstract: Cardiovascular disease and family caregiving are significant issues associated with health, and many people will be impacted by these concerns. If a person experiencing a cardiovascular event is married or in a committed relationship, the spouse/partner typically serves as the caregiver. This requires many physical, emotional, and financial resources which can be extremely stressful for the caregiver. Many times the caregiver will put their loved one's needs before their needs and their own health suffers, often becoming a hidden patient. Interrelatedness exists between spouses/partners. When the caregiver is struggling physically and/or emotionally, the cardiac patient's recovery process can be compromised, suggesting a bidirectional health influence among the couple. In order to experience the best outcomes, both the cardiac patient's and the caregiver's health and well-being must be addressed. The Heart to Heart program seeks to provide strategies and tools to strengthen this intimate relationship by addressing communication, life style management, and stress reduction delivered through five one hour sessions. Heart to Heart is a Master's Project in its developmental stage.

12:15 Alexandra Chong, Psychological Sciences,

The conditional effects of home-work conflict on mental health benefits of breastfeeding.

Abstract: The current study examined the conditional effects of home-work conflict on the process of first-time mothers' breastfeeding efficacy on length of duration and depression. Results indicated that breastfeeding duration mediated the relationship between prenatal efficacy and depression at 9-months postpartum for working mothers who experience low levels of home-work conflict. Specifically, for mothers with low amounts of home-work conflict, higher efficacy was related to a longer duration in breastfeeding, which in turn was associated with lower scores of depression. These findings have important implications for increasing breastfeeding efficacy and managing work home balance during the transition to parenthood.

Art, Literature, & Philosophy

Room 313

JUDGE(S): Dr. Ji Young Cho, Dr. Bill Sallak, Dr. E. Sue Wamsley

11:00 Adam Shatsky, Philosophy,

The time traveler's alternative possibility.

Abstract: The Principle of Alternative Possibilities (PAP) states that a person is morally responsible for an action only if she could have done otherwise. Harry

Frankfurt (1969) has famously shown a counterexample to PAP, which is now known as a 'Frankfurt-Style' counterexample. In this paper I respond to a recent argument from Joshua Spencer (2012) where he argues for a new kind of Frankfurt-Style counterexample. Spencer's counterexample is based on the possibility of time travel, which is akin to Lewis's grandfather paradox. He argues that a time traveler can still be held morally responsible for saving his grandfather, even though he could not have done otherwise. By highlighting how PAP is properly understood—as a thesis about basic (i.e., direct, or nonderivative) moral responsibility, I will argue that Spencer's proposed counterexample is in fact not a Frankfurt-Style counterexample and there is still a sense in which a time traveler could have done otherwise, despite its oddities.

11:15 Amanda Stovicek, English,

Zombie representation and posthuman consciousness.

Abstract: The myth of the zombie has gone through periods of reshuffling that have changed its representation in popular culture. From its Haitian origins to the contemporary manifestation of plague-like horrors, the fear of the zombie has always stemmed from its "otherness" or alienation from our notion of our Self and human nature. The zombie is the embodiment of basic instinct and loss of human nature, but is it truly divorced from what it means to be human? The recent trend of zombie fiction towards the monster's humanization sheds light on author and critic N. Katherine Hayles' understanding of Posthumanism, which is characterized by consciousness in many forms and a constant reconstruction of its parts. Zombie manifestations that break away from the instinctual automaton and become protagonists capable of sentient thought allow us to recognize "otherness" within ourselves and conceptualize our own Posthumanism. This exploration specifically casts light on Posthumanism through the texts Breathers: A Zombie's Lament by S. G. Browne and Warm Bodies by Isaac Marion, both of which feature articulate, perceptual zombie protagonists. Once we can feel for a monster that just years ago repulsed us, we can explore our own humanity, inhumanity, and posthumanity.

11:30 Lorianna Clarke-Alexander, Art,

The Netherlands in the Fifteenth Century: Books of hours produced in Haarlem and Ghent-Bruges.

Abstract: Books of hours produced in The Netherlands were popular during the fifteenth century. The Haarlem Group, active in the North, and the Flemish Moerdrecht Group, active in the South were two main groups creating books of hours during this time. Religious houses dominated book production in the North, while professional workshops in the South. Both groups created books of hours through collaborations with other artists, workshops, and religious houses. This dissertation is a comparative analysis of books of hours produced in Ghent-Bruges versus Haarlem. I

argue that Haarlem used models to further emulate the suffering of Christ to accompany the beliefs of Devotio Moderna, while Ghent-Bruges used models to produce cheap books for an international market. Moreover, I argue the audience for Haarlem books of hours was predominately females of religious houses. This dissertation compares and contrasts how production operated in both centres, by exploring the decorative scheme and model usage of both groups.

11:45 Stephanie Kowalczyk, Art,

The influence of Las Meninas in the work of Sargent, Eakins and Whistler.

Abstract: My research examines the differently manifested influences of the same monumental artwork by seventeenth century Spanish artist, Diego Velazquez, in the work of American artists John Singer Sargent, Thomas Eakins and James McNeil Whistler.

12:00 Paul Floriano, Theater and Dance,

Bullying in theatrical literature.

Abstract: To explore the issue of bullying in our society and use theatrical literature as the backdrop. To empower us all to discuss our own experiences with bullying and express our feelings about it. The second half of the presentation will be to write a very short play dealing with bullying created by the attendees.

12:15 Joshua Murray, English,

Amiable with manuscripts: In the archives with Claude McKay.

Abstract: In 2009, Jean-Christophe Cloutier discovered, while sorting through the Samuel Roth papers at Columbia University, a manuscript that did not belong to Roth. Three years later, following the literary detective work of Cloutier and his advisor Brent Hayes Edwards, they successfully authenticated the manuscript as Amiable with Big Teeth, an unpublished and previously undiscovered 1941 novel by Claude McKay. This new discovery adds another novel to McKay's canon, which up to that point had consisted of three published novels, a book of short stories, and several volumes of poetry. This discovery changed the landscape of both McKay studies and Harlem Renaissance studies, yet the manuscript remains unpublished in the archives of Columbia University. Through the use of the GSS Research Award, I have the opportunity to read and examine this manuscript in person in March 2015. Through an in-depth analysis, I hope to place this later novel of McKay's in conversation with his earlier works, thereby providing me with insightful information that will inform my dissertation as well as my future scholarship.

Computer Science, Math, & Engineering

Room 314

JUDGE(S): Dr. Jonathan Maletic, Ms. Tuyet Pham

11:00 Corey Lyons, Mathematics,

Induced characters with equal degree constituents.

Abstract: We investigate the situation of a finite group G having a subgroup H with the property that all nonprincipal irreducible characters of H induce to G as a sum of irreducible characters all having equal degree. If H has this property in G, then the subgroup H either contains, or is contained it, the commutator subgroup G' of G. We focus on the case when H is properly contained in the commutator G' of G and the normal closure of H in G is equal to the commutator subgroup G' of G. In this case we show that G is solvable.

11:15 Kavia Aruchamy, Applied Engineering, Sustainability and Technology,

Analysis of geodome vertical axis wind turbine.

Abstract: This research supports the design of an aerodynamic section blade for the Geodome Vertical Axis Wind Turbine (GVAWT) and analysis of the same for a wide variety of wind conditions. This project assesses the performance of the blades at different angles of attack. The GVAWT is an attractive, wind-turbine alternative that can be economically used in open areas such as parking lots and fields. The turbine blade is modeled in the Solid Edge CAD software package. A rapid prototype turbine blade using additive manufacturing has been created. The forces acting on the section blade at different angle of attack have been measured by conducting wind tunnel experiments. Using these results, the torque, loading, and performance of the GVAWT can be determined.

11:30 Michael Decker, Computer Sciences,

Heuristic syntactic differencing for source code change comprehension.

Abstract: An efficient heuristic-based syntactic-differencing approach is presented. A set of heuristics is used to refine the syntactic difference to produce the delta between the original and modified. The resulting delta models edits to the code that are meaningful to the programmer within the context of the programming language. This is a large departure from the deltas produced from line-based differencing tools. The approach is more akin to a track-changes feature in a word processor that captures keystrokes as edits. However, the approach presented here produces track-changes like deltas from any two source-code versions without the edit data. The resulting deltas concisely describe the source-code change in a manner that can be easily understood by the programmer. To evaluate the approach, a comparison study against GNU diff was conducted. An online within-participant study of almost 100 subjects was

performed. The results clearly show that the heuristic-based syntactic approach produced more understandable deltas.

11:45 Naser Madi, Computer Sciences,

Above the clouds: An overview of cloud computing.

Abstract: This presentation aims at giving an understanding of cloud computing and the future challenges that face it. Cloud computing is affecting the way we interact with technologies dramatically. Accessing computing power as a utility has been a dream since the 60s. We will present the hardware aspects that made cloud computing a desirable service. In addition to that, we present the cost, operational overhead, and resource allocation factors that should be considered before moving to the cloud. Finally, we present 10 obstacles and opportunities for cloud computing.

12:00 Christian Newman, Computer Sciences,

Normalizing refactorings: A means to simplify the construction of source code transformations.

Abstract: A set of refactorings to systematically normalize selective syntax in C++ is presented. The objective is to normalize syntactic variations into a single form to simplify the construction of large, complex program transformation rules. Current approaches to constructing transformations require developers to account for a large number of syntactic cases. Many of these cases are syntactically different but semantically equivalent. This work identifies all the classes of such syntactic variations and presents normalizing refactorings to simplify each variation to a single normal syntactic form. The normalizing refactorings for C++ are presented. The refactorings are implemented and automatically applied on two open source systems. The evaluation uses the system's test cases to verify that the normalizing refactorings do not impact the systems' behavior. Additionally, examples of transformations that benefit from the prior application of normalizing refactorings are presented.

Beyond the Microscope

Room 315

JUDGE(S): Dr. Gail Fraizer, Mr. Prithviraj Nandigrami

11:00 Sahil Sandesh Gandhi, Liquid Crystal Institute,

Stimuli-responsive gelatin nanoparticles.

Abstract: Smart polymeric nanoparticles have gained considerable attention due to their unique properties tailored from the combination of stimuli-responsiveness and nanoscale size in a single material system. Such nanoparticle systems hold great potential for use in biomedical applications such as controlled drug release, tissue engineering, biosensors, etc. We present a novel tunable thermoresponsive gelatin

nanogel that exhibits a volume reduction of more than at due to the helix to random coil transition of gelatin chains confined in the nanogels. This novel helix-melting mechanism is markedly different from the reversible random coil to globule transition that occurs at the lower critical solution temperature (LCST) in popular thermosensitive polymers like pNIPAM. Using dynamic light scattering, transmission electron microscopy, and polarimetry, we study how temperature changes affect the particle size and the molecular configuration of smart gelatin nanogels and determine key factors influencing the thermoresponsive properties. The thermosensitive properties of these nanogels can be exploited in the development of new types of stimuli-responsive, biomedically relevant materials based on natural polymers.

11:15 Brian Hunt, Physics,

Understanding nucleon resonances through the use of photons.

Abstract: A nucleon resonance is an excited state of a nucleon. A nucleon is the formal name given to either a proton or neutron of an atom. Nucleons are part of a theory called the Standard Model of physics that most matter is made up of quarks. It is the goal of my research to gain more insight into resonances and their properties. I study two particle reactions to achieve this goal: a photon beam emitted from a particle accelerator hits protons and forms a nucleon which decays into either an Eta or Kaon (unstable particles made up of quarks) and a proton. I will discuss how these so called photo-production reactions have helped clarify our understanding of nucleon resonances and how they impact future theories beyond the Standard Model.

11:30 Shokir Pardaev, Physics,

Angle-resolved second harmonic light scattering from defect structures in nematic and twist-bend phases of liquid crystals.

Abstract: We present angle-resolved second harmonic light scattering studies from a series of magnetically aligned liquid crystal samples, including rod-like and bent-core molecules forming the standard uniaxial nematic phase, and dimers that exhibit the exotic twist-bend phase. We describe models to explain the spatial distribution and polarization of second harmonic scattered light, based on the electric polarization induced by deformations of the molecular orientation that are associated with specific topological defect structures.

11:45 Chamila Gunathilake, Chemistry & Biochemistry,

Mesoporous Organosilica with Amidoxime Groups for CO_2 Sorption.

Abstract: Incorporation of basic species such as amine-containing groups into porous materials is a well-established strategy for achieving high uptake of acidic molecules such as CO2. This work reports a successful use of the aforementioned strategy for the development of ordered mesoporous organosilica (OMO) with amidoxime groups for

CO2 sorption. These materials were prepared by two-step process involving: (1) synthesis of OMO with cyanopropyl groups by co-condensation of (3-cyanopropyl)triethoxysilane and tetraethylorthosilicate in the presence of Pluronic P123 triblock copolymer under acidic conditions, and (2) conversion of cyanopropyl groups into amidoxime upon treatment with hydroxylamine hydrochloride under suitable conditions. The resulting series of amidoxime-containing OMO was prepared and used for CO2 sorption at low (25 oC) and elevated (60, 120 oC) temperatures. These sorbents exhibited relatively high adsorption capacity at ambient conditions (25 oC, 1 atm) and remarkable high sorption uptake (>3 mmol/g) at 60 and 120 oC. This high CO2 uptake at elevated temperatures by amidoxime-containing OMO sorbents is competitive to the commercially used liquid ethanolamine scrubbing. High affinity of amidoxime group toward CO2 and its good thermal stability make the amidoxime-containing OMO material an attractive sorbent for CO2 capture in the fossil fuel-based power plants.

12:00 Karla Gutierrez-Cuevas, Chemistry & Biochemistry,

Novel light-modulated gold nanorods in liquid crystal host.

Abstract: Building metal nanoparticles protected by functional organic molecules is a rapidly growing, fascinating and challenging scientific area of contemporary interest. Gold nanorods (GNRs), provide many promising applications in optics, sensors, biological imaging and anticancer agents due to their extraordinary shape- and surface chemical environment-dependent optical properties, are among the most exciting materials nowadays [1,2]. They are quite different from the widely investigated spherical gold nanoparticles, including more distinguished physical properties particularly for their tunable absorption in the visible and near IR region. Besides, since anisotropic GNRs can give higher sensitivity than spherical ones in surface plasmon shift, GNRs are highly suitable for plasmon sensing with a high-value shape factor (surface curvature). In this talk, we will summarize our recent advance on the synthesis and characterization of organosoluble photoresponsive hybrid gold nanorods and their incorporation in LC host. 1. (a) Li, Q. (Ed) Nanoscience with Liquid Crystals: From Self-Organized Nanostructures to Applications , Chapter 4, C. Xue and Q. Li, Springer, Heidelberg, 2014. 2. (a) J. M El Khoury, X. Zhou, L. Qu, L. Dai, A. Urbas, and Q. Li, Chem. Comm. 2009, 2109. (b) C. Xue, K. Gutierrez-Cuevas, M. Gao, A. Urbas, and Q. Li, J. Phys. Chem. C, 2013, 117, 21603

12:15 Jowita Ludwinowicz, Chemistry & Biochemistry,

Potassium salt- assisted synthesis of highly porous carbon spheres for CO_2 adsorption.

Abstract: Highly porous carbon spheres for CO2 adsorption were prepared by using a modified Stöber synthesis in the presence of potassium oxalate. The synthesized

potassium salt-containing phenolic resin spheres were simultaneously carbonized and activated at 800 oC. Carbonization of the aforementioned polymeric spheres was accompanied by their activation, which resulted in almost five-time higher specific surface area and total pore volume, and almost four-time higher micropore volume as compared to analogous properties of the carbon sample prepared without the salt. The proposed synthesis resulted in microporous carbon spheres having the surface area of 2130 m2 g-1, total pore volume of 1.10 cm3 g-1, and the micropore volume of 0.78 cm3 g-1, and led to the substantial enlargement of microporosity in these spheres, especially in relation to fine micropores (pores below 1 nm), which enhance CO2 adsorption. These carbon spheres showed three-time higher volume of fine micropores, which resulted in the CO2 adsorption of 6.6 mmol g-1 at 0 °C and 1 atm. Scanning electron microscopy studies showed that carbons retained spherical morphology despite of the activation process. This study shows that the Stöber synthesis in the presence of potassium organic salts can be used for preparation of highly porous carbon spheres.

Animal Studies & Animal Models

Room 316

JUDGE(S): Dr. P. Bagavandoss, Dr. Min-Ho Kim

11:00 Morgan Chaney, Anthropology,

Learning to live, or living to learn? The life history and foraging behavior of white-faced capuchin monkeys.

Abstract: Primates stand out against other mammals for the long periods they spend as juveniles, and capuchin monkeys stand out among primates for their extension of this same period. Capuchins also display the largest brains relative to their body masses of any nonhuman primate, comparing favorably in this respect to chimpanzees; their rich behavioral repertoire allows these monkeys to exploit a generalized ecological niche that emphasizes the location of high-quality, oftentimes hidden, food resources. One hypothesis, known as needing to learn (NTL), would explain the evolution of lengthened juvenility as an accommodation for juveniles to learn complex foraging skills. Here, I test three predictions generated from this hypothesis with data collected from free-ranging Cebus capucinus in Costa Rica. As predicted by NTL, age-based differences were observed in general foraging-efficiency and for the foraging efficiency on the palm fruit Attalea butyracea, a high-value food item; however, no predicted differences were detected in measures of social foraging or diet across age/sex categories. Thus, results presented here do not unilaterally support NTL; alternative hypotheses to explain the extended juvenility of these monkeys are discussed. Further work should focus on brain growth and development in conjunction with nutrition in order to clarify remaining discrepancies.

11:15 Jennifer Sensor, Biomedical Sciences,

Whale evolution and management: Contributions from the inner ear.

Abstract: The ear of all cetaceans (dolphins, whales and porpoises) is adapted for underwater hearing, and different cetaceans are specialized to hear at opposite ends of the frequency spectrum. Odontocetes (toothed whales) use high frequencies and echolocation, while mysticetes (baleen whales) are specialized to hear low-frequency sounds. Cochlear anatomy plays an important role in these hearing specializations. We studied the bony and soft anatomy of the cochleae of two arctic whales. Belugas (Delphinapterus leucas) and bowheads (Balaena mysticetus) are, respectively, high- and low-frequency specialists. Our samples were collected from whales that were harvested during subsistence hunts near Point Lay and Barrow, Alaska. The purpose of this study is two-fold. First, the arctic environment is quickly changing and this affects the acoustic landscape in which these cetaceans live, and thus their hearing. Understanding of hearing and its challenges is necessary to make prudent management decisions for these populations, especially with regard to human activities that involve loud sound sources, such as seismic surveys for oil and gas. Second, these two species allow us to study the morphological correlates of different frequency specializations and, ultimately, make inferences about frequency specializations in fossil cetaceans, such as the origin of echolocation.

11:30 Angela Freeman, Biological Sciences,

I'm a runner, not a fighter: vasopressin influences predator vigilance and social aggression in Richardson's ground squirrels.

Abstract: Arginine vasopressin (Avp) and its homologues modulate behavior in nearly every vertebrate taxa, and thus provide an elegant system for comparative research. In rodents, Avp is best known for modulating social behaviors, in particular affiliation such as: grooming, sniffing, and forming social bonds and memories. Researchers recently discovered Avp can influence social communication by modulating rodent pup vocalizations. However, this work has not been extended to other species, including free-living species. Richardson's ground squirrels (Urocitellus richardsonii; RGS) are free-living social rodents, in which alarm calling is a proximate manifestation of sociality. To test the hypothesis that Avp influences social communication, we implanted osmotic minipumps into RGS and administered Avp or saline intracerebroventricularly. We examined behavior using a general behaviour survey, a predator model presentation, and a trap-aggression experiment, each before and after Avp or saline administration. While saline treatment had no effect, Avp reduced social aggression and increased predator vigilance and escape behavior in males, but did not affect alarm call behavior. Avp may be acting on other neural substrates to alter these behaviors, or perhaps we have discovered a species-specific

effect. Our discovery of Avp's effects on vigilance in a social setting is particularly exciting and thus highlights Avp's extensive influence on social behaviors.

11:45 Gina Wilson, Biomedical Sciences,

Characterization of cytokine levels in the DBA/2J mouse model of glaucoma.

Abstract: Microglial activation and cytokine signaling are prominent features of neurodegeneration and possibly associated with axonal transport deficits seen in retinal ganglion cell (RGC) projection of DBA/2J glaucomatous mice. But, little is known about cytokine activity outside the retina. DBA/2J and control mice were intravitreally injected with anterograde tracer cholera toxin B (CTB) and sacrificed 48-hrs later. Fixed tissue was assayed for microglial markers; in fresh tissue samples, visual structures were microdissected and 20 cytokines in retina, proximal and distal optic nerves (pON/dON), and CTB-positive and –negative SC subdivisions at different ages were measured with multiplexing assays. Retinal FGF-2 was elevated in all DBA/2Js; also, elevations in retinal IL-12, IFN-γ, MIG, MIP-1α, IL-5 and KC were observed in young DBA/2Js compared to controls, followed by an age-dependent decrease in the DBA/2Js. VEGF, IL-6, IL-17, IL-2, MIP-1α, TNF-α, IL-4, FGF-2, MIG, and KC were attenuated in the pON of young DBA/2Js. In dON, however, age-dependent elevations were shown for multiple cytokines in controls, while DBA/2Js showed few age-related changes. Many collicular cytokines were elevated in young DBA/2Js. Pro-inflammatory IL-6 varied in accordance with transport outcome in the SC. Dysregulation of cytokine signaling in DBA/2J retinal projections is evident early in pathology. Cytokines may signal the progression of pathological changes prior to functional transport loss and RGC death.

12:00 Wade Jones, Geology,

The first paleozoic record of true crabs.

Abstract: The Paleozoic fossil record of decapod crustaceans is one of 'ghost lineages'—lineages that appear as crown clade taxa in the Paleozoic Era without an apparent ancestral lineage, reappearing in late Paleozoic to Mesozoic strata after a temporal gap of tens of millions of years. The eubrachyurans—advanced 'true crabs'—until now, were known from rocks as old as Early Cretaceous from the Americas. Based on this, it was hypothesized that early eubrachyurans, now global in distribution, dispersed from the Americas during the Cretaceous Period. Recognized here is a eubrachyuran from Permian-aged rocks of the Sosio Valley, Italy, extending the geologic range of Eubrachyura by more than 100 million years. Based on this, it is hypothesized that eubrachyurans evolved in the Paleotethys Ocean in Europe and dispersed to the Americas as the Tethys Ocean basin opened and eventually connected with the spreading Atlantic Ocean during the Late Jurassic Period.

12:15 Jennifer Remus, Biological Sciences,

Neuroimmune mechanisms in an animal model of recurrent depression.

Abstract: Depression is recognized as a chronic disorder, which consists of many episodes over a person's lifetime. Researchers have found that individuals who experience one episode of depression become more vulnerable to future episodes, and this susceptibility increases with each passing episode. However, the biological mechanisms responsible for this increased susceptibility are not known. There is growing evidence that the immune system is implicated in depression. For example, depressed patients show elevated levels of cytokines and administration of cytokines or agents that induce cytokines in rodents result in depressive-like behaviors. In this current study, we developed an animal model of recurrent depression and examined the role of cytokines. We demonstrate that when previously stressed animals are re-exposed to chronic stress, they show a sharper decline in sucrose intake and weight than their first exposure. In addition, we found that stressed animals showed a sensitized release of cytokines in the hippocampus following an immune challenge at the end of stress, but no sensitization after recovery. Lastly, we found that blocking the activation of microglia, which blocks the elevated levels of cytokines, is not sufficient to block depressive-like behaviors.

Health Attitudes & Experiences

Room 317

JUDGE(S): Dr. Rebecca Cline, Dr. Christine Hudak, Dr. Ann Jacobson

11:00 Marissa Fye,

Multicultural therapeutic play: Promoting creativity within diverse groups.

Abstract: Multicultural competency is identified as a requirement in the ACA Code of Ethics and continues to be a growing research interest within the fields of Counseling and Counselor Education and Supervision. Additionally, the progress of therapeutic play has allowed a more holistic and creative approach to traditional counseling therapies. However, many counselors maybe unaware that play within counseling is not universal across various cultures. Therefore, counselors may ask, "How does culture influence a child's play? What are the possible clinical implications?" With questions like these in mind, this presentation will address the conference theme of "ACES Leadership for Culturally Relevant Pedagogy and Practice" by providing an interactive presentation that provides an introduction to multicultural play in counseling. Play interventions which are culturally appropriate for integration among specific marginalized populations will be explored.

11:15 Robin S. Eastman, Lifespan Development & Educational Sciences,

Experiences of participation in the running rEVOLUTION.

Abstract: The purpose of this qualitative, phenomenological study was to understand the experiences of rural women who participate in the ten week run training program called the running rEVOLUTION. Individual interviews were utilized to gather data from 13 Caucasian, women between the ages of 22 and 58 from a town in rural Northeastern United States. Emergent themes from the data included improved mental wellness (empowerment and self-confidence), improved physical wellness (health and fitness benefits) and improved social wellness (a sisterhood of support). For all of the women in the study, barriers existed to participation, yet they found the benefits of participation to outweigh the struggle to overcome the various barriers. All of the women in the study reported participation as a positive experience for them and discussed improved mental and physical wellness and in addition, 12 of the 13 (92%) participants reported improved social wellness. These findings have implications for women from rural areas who are interested in improving their overall wellness, as well as for medical and mental health practitioners who are interested in helping women in rural areas to improve their overall wellness. Through community based physical activity, the participants in the running rEVOLUTION have experienced improvement in mental, physical and social wellness.

11:30 Amal Albeshri, Health Sciences,

Dietary intake and food craving during normal menstrual cycling.

Abstract: The purpose of this study was to measure dietary changes and food craving between different phases of the menstrual cycle in normal menstruating women attending Kent State University. It was hypothesized that there is a change in dietary intake during the menstrual cycle, and women experience food cravings during the menstrual cycle. Data collection was divided into two main stages. First, the pre assessment stage where data from (N=60) women were collected using online survey to measure the health status and dietary behavior. Second, the assessment phase (n=18), where the cycle was divided into three main phases (menstrual, follicular, ad luteal) and six measurement methods were used to measure the dietary behavior and track the cycle. Result: there were no significant differences in dietary intake, energy and macronutrients, during the three phases of the cycle. On the other hand, food craving results indicate that food cravings exist during the three phases, and was not significantly related to specific phase. Further studies are needed to examine the dietary behaviors of women during different phases of the cycle. The type of the craved foods needs to be analyzed and measured in correlation with the severity of food restriction

11:45 Aimee Smith, Psychological Sciences,

Improving acceptance of hydroxyurea in sickle cell disease using an ethnically sensitive revision in consent procedure.

Abstract: Objective: Hydroxyurea (HU) is a NIH–recommended treatment for patients with sickle cell disease (SCD) with a rare, but potential side effect of hair thinning. Many patients refuse HU due to concerns about hair loss. This study evaluates via QI approach whether revising consent procedures for HU could increase patients' agreeing to use HU. Methods: 145 youth with SCD at a children's hospital were evaluated. Measures included current prescription for HU and meeting the program's clinical and/or lab criteria for HU. The revised consent informs patient of all risks but is simplified and has benefits listed before risks. Results: Of 117 eligible patients, 17 agreed to a prescription of HU before starting the new consent procedure. A year after introducing the revised consent procedure, 43 of 117 eligible patients agreed to a prescription of HU, an increase of 272%. Using a McNamar test, the change in number of eligible patients on HU was significant ($\chi 2 = 24.038$, $p < .0001$). Changes in number of patients on HU increased at the main hospital (13 to 31; 238%) and the regional campus (4 to 12; 300%). Conclusions: Revising consent procedures to be clear and sensitive to issues important to African-American youth may provide a viable, cost-effective option for improving patients' acceptance of an effective treatment for SCD.

12:00 Chutarat Akkarawongvisit, Nursing,

Mindfulness meditation: A challenging alternative intervention to reduce depression in HIV/AIDS patients.

Abstract: Background: a large number of HIV/AIDS patients are experience psychosocial distress, little else is known about their everyday lives. Mindfulness has been gaining widening acceptance in the Western and Eastern world, especially with respect to reduce of human distress and suffering Purpose: To examine the lived experiences of HIV/AIDS patients in Thailand and examine mindfulness meditation intervention can reduce depression in patients living with this disease Method: This study will use mixed methods study design. There are three phases; the first phase is a correlation - predictive design, which is used to examine stress, emotional support, self-esteem, coping strategies, and depression. The second phase is a quasi-experimental design (pre-posttest) to examine the effectiveness of a mindfulness meditation program. The third phase of the research study is a qualitative approach. Results: The result of this study will answer these questions 1. What is the level of HIV/AIDS patients' depression? 2. What is the relationship between the psychological variables and depression among HIV/AIDS patients? 3. What psychological variables are predictors of depression among HIV/AIDS patients? 4. How does depression level difference between HIV/AIDS patients who did/did not do the Mindfulness

Meditation intervention? 5. How is the depression experienced on HIV/AIDS patients? 6. What are treatment group patient's perceptions of the Mindfulness Meditation intervention?

Water & Ecology

Room 318

JUDGE(S): Dr. Jeremy Green, Dr. Tom Schmidlin

11:00 Krista Brown, Geology,

After the dam comes down: Groundwater-stream interactions and water quality effects of restored and unrestored reaches in Northeastern Ohio.

Abstract: Dam removals have become increasingly popular, as many dams near the end of their life expectancy. This study aims to develop an understanding of groundwater-stream interactions and water quality after dam removal. Low head dams were removed in 2009 on Plum Creek and Kelsey Creek, tributaries to the Cuyahoga River. Kelsey Creek reservoir remains unaltered and consists of a stream channel flowing through riparian-wetland environments, while Plum Creek reservoir underwent restoration in 2011. Water quality is being evaluated with field-measured parameters and ion chromatography. Plum Creek is being used to understand the water quality effects of restoration. At Kelsey Creek, the stream tends to contribute shallow groundwater flow toward the western side of the site and north, parallel to the stream. The well closest to the stream shows variability in specific conductance, indicating bidirectional groundwater-stream exchange and all wells show rapid response to precipitation events. Despite the wetland and groundwater-stream exchange at Kelsey Creek, there is little change in stream water quality within the former reservoir site, similar to Plum Creek site. This suggests that there is little water quality benefit to be gained from stream restoration at dam removal sites. Left unaltered, Kelsey Creek provides flood control and recharge.

11:15 Sebastian Dirringer, Geology,

Landslide inventory and susceptibility mapping of the Driftcreek Watershed, Lincoln County, Oregon using LiDAR data.

Abstract: Excessive sedimentation, turbid waters, and stream warming of the Driftcreek Watershed, Lincoln County, Oregon is of concern to the Oregon Department of Environmental Quality (DEQ). Several state and federal agencies collected light detection and ranging (LiDAR) elevation data in 2011 in order to map impaired areas for landslides and their susceptibility to future landslide hazards. A total of 469 landslides were located in the Driftcreek Watershed, through applications of the geographic information system (GIS), including digital elevation models (DEM) derived from LiDAR data and planimetric maps. Each mapped landslide was

characterized by the type of movement, head scarp height, slope, failure depth, relative age, and direction. A portion of the total landslides mapped using LiDAR data were field checked to ensure mapping accuracy. Rock and soils samples were taken to the lab to further understand the engineering geology behavior of the region's geologic formations. The results of this study include a detailed landslide inventory map and a susceptibility map, which identifies areas of potential future landslides.

11:30 Eric Traub, Geology,

Effects on the mobility of trace metals in an area affected by acid mine drainage.

Abstract: Currently, a watershed restoration group has made progress in remediating surface water contributions to the Huff Run Stream in Mineral City, OH, which is heavily affected by acid mine drainage (AMD) due to historical coal mining. However, the accumulation of AMD sediments on the streambed has prevented the overall ecological health of the area from rebounding. A proposed remediation plan includes dredging, however the efficacy of doing so while preventing further iron buildup and the potential release of trace metals during such an operation is uncertain. The objectives of this research are to examine the effects geochemical sinks can have on the fate and transport of trace metals in order to understand the possible side effects of dredging on the Huff Run. For this research, mineralogical changes within stream bed sediments of the Huff Run and the nearby Farr Tipple tributary have been characterized in order to understand how mineralogy affects trace metal transport. Hyporheic exchange has also been analyzed in order to understand how this exchange between surface water and groundwater can affect trace metal concentrations. This work aims to build a framework on which to base proposed remediation plans at a wider range of acid-mine drainage impacted sites.

11:45 Ryan Schoeneman, Biological Sciences,

Hacking the sciences: Open source hardware in the lab and field.

Abstract: The open source movement started more than a decade ago with free and open collaboration on software to achieve common goals. With the widespread availability of affordable and powerful micro-controllers, instant global communication and affordable micro manufacturing (Desktop CNC and 3D Printing), the open concept can now be applied to hardware tools as well. Open Source Hardware represents a new paradigm of tools that can be made and remade from freely available plans that are created and improved through the collaboration of individuals across the globe, and often at a fraction of the price of a commercial alternative. The affordability of open hardware could prove indispensable to leveling the playing field for smaller labs and those with less funding, and the collaborative nature of these tools makes them particularly suited to the sciences. An example of this is the Cranberry, an open source aquatic sensor developed at Kent State

University that is affordable and easily constructed from off the shelf materials. Serious hurdles still exist however. Open source hardware often lacks the rigor, testing, organization and support of commercial alternatives, and these issues must be addressed if affordable, assembled-on-demand tools are to used in scientific inquiry.

12:00 Joshua Moore, Anthropology,

Tropical lianas: Correlations with habitat type and primate use at Brownsberg Nature Park, Suriname.

Abstract: Studies show that a dramatic increase in liana biomass in tropical forests is correlated with recent increases in atmospheric CO2. An increase in liana abundance may increase the diversity of food types, but high liana loads have a negative impact on tree survival. This study provides a baseline for assessment of liana density and primate habitat preference in a relatively undisturbed forest in the Guiana Shield. Data were collected at Brownsberg Nature Park Suriname from May to June, 2013, on aspects of tree size and canopy cover, and liana number and diameter in 163 10 x 10m plots. Liana biomass was calculated using established methods and combined with a concurrent primate survey of preferences for "plateau" or "slope" forest. Slope forest had a higher liana biomass (Pearson R = 0.17, P = 0.03, N = 163) and higher canopy cover (R = 0.17, P = 0.03). Only Ateles paniscus expressed a preference for slope and higher canopy cover. Saguinus midas preferred plateau forest with lower canopy cover. The combined primate sample showed a trend toward a preference for high liana density (R = 0.14, P = 0.07). The effect of climate change on tropical forest primates is of great interest and increasing density of lianas may affect habitat preferences in complex ways.

12:15 Andrew Skrinyer, Anthropology,

Ecology of edges: Effects of disturbance on primate distribution on the Osa Peninsula.

Abstract: Despite retaining most of the world's biological diversity, rainforests are the fastest disappearing habitats on Earth (Bierregaard et al 1992; Laurance et al., 2012). Forest loss leads to fragments that contain newly formed edges. These edges are dynamic and respond to microclimate changes, wind penetration, and temperature change (Bierregaard et al. 1992). Forest fragments in the Osa National Wildlife Refuge were surveyed for five weeks in June and July 2014 for primate distribution and rainforest ecology. Primate species surveyed include Ateles geoffroyi, Saimiri oerstedii, Alouatta palliata, and Cebus capucinus. The distribution of Ateles geoffroyi was emphasized due to its vulnerability to habitat loss and "Endangered" status on the IUCN Red List. Types of anthropogenic disturbance at the site include deforestation due to selective logging, agriculture, cattle encroachment from bordering farmland, and direct disturbance due to an interpolated road through the forest; while one form of natural disturbance was included consisting of rainforest margin that borders the

Pacific Ocean. Results confirm the marked recovery of this forest habitat since 2001. Furthermore, there was little difference in the ecological data between edge and interior forest and Ateles geoffroyi exhibited no preference between edge and interior forest.

Mechanisms of Disease

Room 319

JUDGE(S): Dr. Ratchneewan Ross

11:00 Sony Pandey, Biological Sciences,

WT1 regulation of Cyclin A1 in leukemia

Abstract: WT1 is an important transcription factor (TF) regulating gene expression in variety of cell systems. In leukemia WT1 behaves as a potential oncogene and upregulates expression of Cyclin A1 (CCNA1). Three WT1 binding sites were identified in the CCNA1 promoter using the MatInspector software and binding was further confirmed at two of the three sites in-vivo using Chromatin Immuno-precipitation(Ch-IP). To test the functionality of this binding, we over-expressed both wild type and Zinc finger mutated (lacking DNA binding domain) WT1 constructs in K562 cells to evaluate the changes in CCNA1 levels. We found CCNA1 RNA levels increased in wild type WT1 transfected cells, but the mutant protein failed to up-regulate. In luciferase reporter assays where these WT1 constructs were transfected along with distal CCNA1 promoter, only wild type WT1 activated the promoter whereas the ZF mutant had no effect. However, WT1 could also be potentially binding at non-canonical sites such as the GC boxes in the core promoter region, because the proximal CCNA1 reporter construct lacking WT1 binding sites, was also activated by WT1 over-expression. Overall it is important to identify oncogenes such as WT1 as they regulate expression of proliferative genes such as CCNA1.

11:15 Monica Burgett, Biomedical Sciences,

Cancer stem cell contact with endothelial cells mediated through L1CAM and Integrin αvβ3 promotes endothelial cell migration.

Abstract: A characteristic attribute of glioblastoma tumors (GBM) is angiogenesis, which requires endothelial cell (EC) migration, and is facilitated by signals in a specialized microenvironment where cancer stem-like cells (CSC) reside in proximity to ECs. This study aimed to determine whether CSCs and ECs directly interact, the mechanism by which this occurs, and the effect on EC function. Our data confirmed that CSCs were localized in proximity to brain ECs in GBM biopsies and indicated that ECs and CSCs interacted through a mechanism mediated by integrin αvβ3 on ECs binding the RGD-peptide in extracellular L1CAM on CSCs. This direct interaction "primed" ECs for chemotactic migration and activated the downstream effectors ERK and JNK. A cyclic RGD-peptide, neutralizing antibodies to integrin αvβ3 or L1CAM,

and downregulation of β3 on ECs or of L1CAM on CSCs all inhibited EC-CSC direct interaction and decreased EC motility. Cyclic RGD-peptide treatment of mouse GBM tumors reduced the percent of Sox2-positive cells within 10 and 25-microns of vessels. This study suggests that CSCs promote EC motility through direct contact with ECs via CSC L1CAM and EC αvβ3, highlights the significant contribution of this physical interaction in promoting angiogenesis in GBM, and suggests an additional target for therapy.

11:30 Reeba Paul, Biomedical Sciences,

Identification of geographical trends of substitution patterns in CTL epitopes of HIV-1: Influence of socioeconomic status of the host population.

Abstract: Human immunodeficiency virus-1 (HIV-1), the causative organism of Acquired Immunodeficiency Syndrome (AIDS), is one of the leading causes of death around the world today. HIV affects populations throughout the world, which are diverse in their socioeconomic and cultural background. Since epitopes are viral regions often targeted in vaccine development, we focused our study on associated CTL epitopes, a category of epitopes that we showed are highly conserved among different HIV-1 subtypes. To better understand forces driving sequence changes in HIV-1, we examined patterns of synonymous and non-synonymous substitutions at various CTL epitopes in Pol genes collected from different countries classified in different socioeconomic categories. Comparisons of substitution patterns showed that the rates of nucleotide sequence changes at associated and non-associated epitopes were lower among HIV-1 sequences sampled in the countries with higher World Bank income category or higher stability than those from less stable countries. Our results demonstrated that geography-driven socioeconomic factors also play a role in the evolution of HIV-1, influencing molecular sequence changes at CTL epitopes in particular. This has important implications for vaccine/drug development against HIV infection in countries with diverse socioeconomic status.

11:45 Madara Hetti Arachchilage, Biological Sciences,

Identification of protein-protein interaction sites between HIV-1 reverse transcriptase and integrase using coevolutionary analysis.

Abstract: The replication of HIV-1 virus requires reverse transcription of viral RNA genome by reverse transcriptase protein and integration of pro-viral DNA into the host genome by integrase proteins. The formation and stabilization of the pre-integration complex , which is a crucial step for reverse transcription subsequent integration involves direct and indirect modes of interaction between RT and IN proteins. While epitope-based treatments targeting IN–viral DNA and IN–RT complexes appear to be a promising combination for an anti-HIV treatment, the mechanisms of IN-RT interactions within PIC are not well understood due to the transient nature of the

protein complex. The main purpose of this study was to identify potentially interacting regions between IN and RT proteins within PIC through coevolutionary analysis of amino acid sequences of the two proteins, in order to better understand interaction mechanisms of IN-RT complex. Our results show that: 1) specific regions in the two proteins have strong coevolutionary signatures suggesting direct and prolonged interactions between them that require high affinity and/or specificity, 2) on the other hand, other regions were found to exhibit weak, but positive correlations, implying interactions that are likely transient and/or have low affinity. Using this approach, we were able to identify a series of specific regions of potential interactions between IN and RT proteins.

12:00 Prakash Kharel, Chemistry & Biochemistry,

Evidence of extensive RNA oxidation in multiple sclerosis brain.

Abstract: The role of reactive oxygen species (ROS) in the progression of neurodegenerative and neuroinflammatory disorders, such as multiple sclerosis (MS) has been highlighted in recent years. Due to the debilitated cellular antioxidant defense mechanism in the neurons in MS, and their vulnerability to ROS effects, the cellular components in neuronal cells are susceptible to oxidative damage. The damage due to ROS in different protein, lipid, and DNA molecules and its contribution in disease pathogenesis has already been shown in MS Brain. Using an in situ approach we identified the oxidative damage in the RNA of the neuronal cells of postmortem MS brains. We analyzed the presence of oxidative damage marker nucleoside 8-hydroxyguanosine (8-OHG) to determine the presence of oxidized RNA in MS brain. Immunohistochemical analyses with monoclonal anti 8-OHG antibody showed conspicuous oxidation in the cytoplasm and to a less significant in the nucleus of neuronal cells within the MS brain, whereas similar structures were dimly immunopositive in control brain tissues. This was further confirmed by immunoprecipitation and HPLC analyses of total RNA isolated from MS brain. To the best of our knowledge, this is the first evidence of increased RNA oxidation restricted to MS neurons. The current study begins to define the role of RNA oxidation in MS pathophysiology.

12:15 Rituparna Ganguly, Biomedical Sciences,

Atheroprotective mechanism of Chromium picolinate in Streptozotocin-induced diabetic ApoE$^{-/-}$ *mice.*

Abstract: Atherosclerosis is a major macrovascular complication that significantly impacts national healthcare expenditures in diabetic patients. Trivalent chromium (Cr3+), is a mineral nutrient reported to have beneficial glycemic and cardiovascular effects. However, mechanisms of Cr action in the large vessels in diabetes remains unknown. We recently reported that Chromium picolinate (CrP, a bioavailable form of

Cr3+) downregulates a potent proatherogenic protein, thrombospondin-1 (TSP-1) expression in glucose-stimulated vascular smooth muscle cells in vitro. The present study provides the first evidence for an atheroprotective mechanism of Cr3+ in a mouse model of diabetic atherosclerosis. Streptozotocin (STZ)-induced hyperglycemic ApoE-/- mice (blood glucose>250mg/dl) were treated with or without CrP in drinking water for 10 weeks. En-face atherosclerotic lesion studies demonstrate a reduction in lesion formation in CrP-treated mice. High-frequency ultrasound imaging of carotid artery further reveals increased lesions and a significant reduction in vessel diameter in untreated STZ-ApoE-/- vs CrP-treated mice. Importantly, the atheroprotective effects of CrP were accompanied by significant decrease (>35%) in TSP-1 expression in aortic tissue lysates of STZ-ApoE-/- vs. untreated STZ-ApoE-/- mice. Additionally, knockout of TSP-1 in ApoE-/- mice prevents atherosclerosis caused by STZ-induced hyperglycemia. Together, our results suggest TSP-1 as a novel therapeutic target of Cr3+ in diabetic atherosclerosis.

Awards Luncheon

12:30-2pm, Ballroom

Keynote Speaker: Dr. Beverley Warren

Dr. Beverly Warren became Kent State University's 12th president on July 1, 2014. As the university's chief executive officer, Dr. Warren oversees one of the nation's largest university systems. Kent State's eight campuses provide more than 300 academic programs to more than 41,000 undergraduate and graduate students from throughout Ohio and the nation, and from over 100 countries. One of the largest employers in Northeast Ohio, the university employs more than 5,700 full- and part-time faculty and staff.

Prior to coming to Kent State, Dr. Warren had served as provost and senior vice president at Virginia Commonwealth University (VCU) since 2011. She arrived at VCU in 2000 as a professor and head of the School of Education's Division of Health, Physical Education and Recreation, and went on to serve as dean of the School of Education. Before joining VCU, Dr. Warren held faculty positions at Smith College in Massachusetts; Auburn University in Alabama; Appalachian State University in North Carolina; and Lander University in South Carolina.

Dr. Warren is an internationally respected and widely published scholar in the fields of education and exercise physiology. Her most recent research focused on urban education, including access and success for urban youth, the preparation of teachers for urban environments and coordination of education through P-20 initiatives. She is a Fellow of the American College of Sports Medicine and the Research Consortium of the American Alliance for Health, Physical Education, Recreation and Dance. She was elected to the Board of Trustees of the American College of Sports Medicine in 2004 and is a former president of its Southeast Chapter.

A North Carolina native, Dr. Warren earned a Bachelor of Science degree from the University of North Carolina at Greensboro and a Master of Science degree from Southern Illinois University. She holds two doctorates, an Ed.D. in administration of higher education from the University of Alabama and a Ph.D. in exercise physiology from Auburn University.

Graduate Student Senate

The Graduate Student Senate (GSS) represents the concerns of the graduate student community at Kent State University. By serving as an allocation body, the Graduate Student Senate is responsible for assisting with graduate student travel and research funding. Additionally, the Graduate Student Senate organizes and provides financial support for social activities for graduate students. Each spring the Graduate Student Senate sponsors the Graduate Research Symposium, an event that displays, recognizes, and celebrates research and scholarship across all academic disciplines. The Graduate Student Senate meets four times each semester, and lunch is always provided. The Friday following each general meeting, a social event known as GradFest is held at a local establishment. All graduate students are welcome to become involved with the Graduate Student Senate.

GSS Executive Board (2014-2015)

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GSS Website: www.kent.edu/graduatestudies/gss
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Save the date!

The 31st Annual Graduate Research Symposium will be held on Friday, April 22, 2016.

Acknowledgements

A sincere thank you to all who served as judges and volunteers!

JUDGES: Ms. Hana Alghamdi, Ms. Cecilia Arruda, Dr. P. Bagavandoss, Dr. Brian Barber, Dr. Soumitra Basu, Dr. Rachael Blasiman, Mr. Greg Blundell, Dr. Jim Bracken, Mr. Mark Brotman, Dr. Sloane Burgess, Mr. Ken Burhanna, Ms. Amanda Burke, Dr. Gemma Casadesus Smith, Dr. Yea-Jyh Chen, Dr. Ching-I Chen, Dr. Vinay Cheruvu, Dr. Lisa Chinn, Dr. ji young cho, Dr. Kelly Cichy, Dr. Rebecca Cline, Dr. Reid Coffman, Dr. Fashaad Crawford, Dr. Jacqueline Curtis, Dr. Pratim Datta, Dr. Bansidhar Datta, Dr. Doug Delahanty, Dr. Yanhai Du, Mr. Joseph Ferut, Ms. Heather Flynn, Dr. Gail Fraizer, Ms. Julie Gabella, Mr. Yang Gao, Dr. Judith Gere, Dr. Claudia Gomez, Dr. Jeremy Green, Dr. Vladimir Gurau, Ms. Christina Hank, Dr. Sanna Harjusola-Webb, Dr. Elda Hegmann, Ms. Karen Hillman, Ms. Rebecca Hoffman, Dr. Daniel Holm, Dr. Mary Hricko, Dr. Christine Hudak, Dr. Julia Huyck, Ms. Madonna Igah, Dr. ANN JACOBSON, Dr. Jay Jahangiri, "Mr. MANGESH Kanvinde, MD PhD", Dr. Kathryn Kerns, Dr. Min-Ho Kim, Dr. Insook Kim, Dr. Derek Kingsley, Ms. Micheline Koerich, Dr. Edgar Kooijman, Ms. Cindy Kristof, Ms. Sonali Kudva, Mr. Varun Kumar, Dr. Yuko Kurahashi, Dr. Stephanie Libbon, Ms. Virginia Little, Mr. William Lucak, Dr. Jonathan Maletic, Dr. Richard Mangrum, Dr. Jennifer Mapes, Dr. John McDaniel, Mr. Prithviraj Nandigrami, Ms. Shazia Nasir, Dr. Eric Pempus, Ms. Tuyet Pham, Mr. Mark Pike, Ms. Megan Pitcher, Dr. Chris Post, Dr. Mary Ann Raghanti, Dr. Sara Raven, Dr. Jennifer Roche, Dr. Ratchneewan Ross, Dr. Susan Roxburgh, Dr. Fayez Safadi, Dr. Bill Sallak, Dr. Tom Schmidlin, Dr. Adil Sharag-Eldin, Dr. Jake Shelley, Dr. Scott Sheridan, Dr. Sarah Smiley, Dr. Jeanne Smith, Ms. Melissa Spohn, Dr. Maggie Stedman-Smith, Mr. Adam Steele, Ms. Cynthia Stillings, Dr. Diane Stroup, Dr. Clarissa Thompson, Dr. Brett Tippey, Dr. Anthony Tosi, Ms. Kristen Traynor, Dr. John Updegraff, Dr. Laurie Wagner, Dr. E. Sue Wamsley, Dr. Yafen Wang, Dr. Kristy Welshhans, Dr. William Willoughby, Dr. Sonya Wisdom, Dr. Keith Wisdom, Dr. xinyue ye, Mr. Jon Yoder, Dr. Yin Zhang

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#KSUGradResearch

Join us next year on April 22, 2016 for the 31st Annual Graduate Research Symposium!