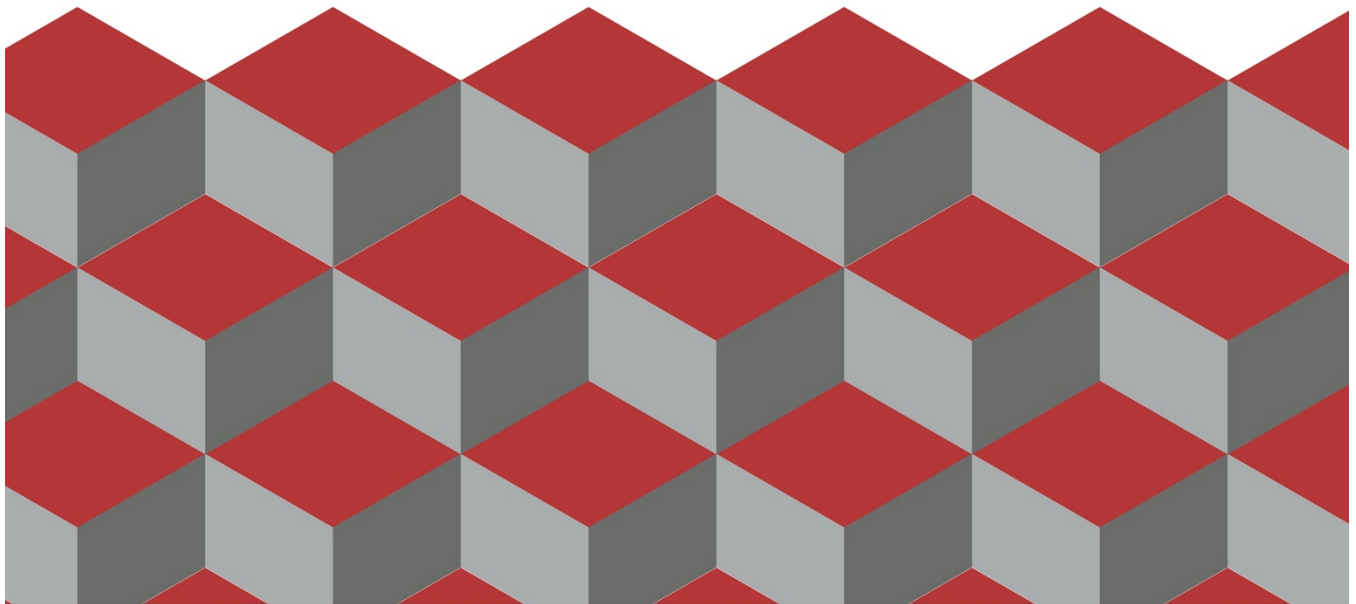


22ND ANNUAL

RESEARCH FORUM 2020

FEBRUARY 29
UNIVERSITY OF NEVADA, LAS VEGAS



U • N • L • V
GRADUATE & PROFESSIONAL
STUDENT ASSOCIATION

UNLV

GRADUATE
COLLEGE



UNLV

*The Graduate & Professional Student Research
Forum is sponsored by the Graduate &
Professional Student Association and the
Graduate College.*

*We'd like to thank the faculty judges and student volunteers. Without your
support this event would not be possible.*

22nd Annual Graduate & Professional Student Research Forum

Marta Meana, Ph.D.
President



Dear Students, Colleagues, and Guests:

It is my pleasure to welcome you to UNLV's 22nd Annual Graduate Research Forum! Events like these bring our students, faculty, staff, and community together in celebration of the cutting-edge research that is taking place right here on campus. As you know, UNLV now holds the prestigious designation of Carnegie RI with "very high research activity" -the gold standard for research universities. RI status is a massive accomplishment, and it is not one that we take for granted.

We continue to increase our research presence, most recently with the opening of Black Fire Innovation as the debut research building of the UNLV Harry Reid Research and Technology Park. Our researchers continue to win coveted grants and partnerships, and publish in national media outlets. I am so proud of the way our incredible students, faculty, and staff are striving every day to further elevate UNLV among the nation's top universities.

In the Research Forum, you will see the innovation and creativity that has propelled UNLV into the top 3% of research universities. With graduate and professional representatives from colleges across campus, I encourage you to be curious and engage with the presenters. Behind every exhibit is a network of academics, researchers, mentors, and many others who helped bring an idea to fruition. They are all perfect examples of the talent and hard work that contributed to UNLV achieving Carnegie RI status and national recognition. They are also a peek into the wildly exciting future of research at UNLV.

Carnegie RI is just the first step of our overall Top Tier vision, which includes excelling in education, community impact, and scholarly activities. I am thrilled to say that we are moving forward boldly, thanks to the work of the dedicated individuals you'll meet during this forum, along with many, many others.

Thank you for participating in this meaningful event and for your tireless commitment to excellence in research at UNLV!

22nd Annual Graduate & Professional Student Research Forum

Chris L. Heavey, Ph.D.
Interim Executive Vice President and Provost



Today we celebrate the most outstanding research our graduate students are producing, and it is truly a point of pride for UNLV to showcase their work.

Our students on a daily basis demonstrate their drive to apply what they learn to solving real-world problems through well-reasoned research and creative activity.

The strength of their work has been recognized and has elevated our standing as a university. UNLV was recently designated an R1 “very high research activity” institution in the Carnegie Classification of Institutions of Higher Education. This is the gold standard for research among all American universities.

As student researchers, creators and innovators, the work they do can have far-reaching influence on the well-being, sustainability and vitality of our community.

So much of the work our students do is rooted in inspiration from their lived experiences, and it is geared toward improving the future for all of us as global citizens.

I am delighted to be part of this wonderful community of scholars and researchers. I am eager to see the impacts of this work as our students carry into the future what they started here.

During today’s forum, I encourage you to join these gifted researchers as they guide you through their journey of exploration, discovery and innovation.

I am certain you will be impressed and inspired.

22nd Annual Graduate & Professional Student Research Forum

Kate Hausbeck Korgan, Ph.D.
Graduate College Dean



Hello and welcome to the 22nd Annual Graduate & Professional Student Research Forum at the University of Nevada, Las Vegas! It is a great pleasure to participate in this grand UNLV tradition with you. When this event began in 1998 we were much smaller, and we had not yet been recognized as the Carnegie Research High institution. Today, UNLV is a thriving Minority Serving Institution and was recognized as a Carnegie "Very High Research Activity," also known as tier one or R1, university just one year ago. This is a tremendous accomplishment for UNLV and it's a reflection of the outstanding and innovative work of our graduate faculty and students.

One of the wonderful things about this tier one Carnegie status is affirmation that graduate education is a centrally important part of our campus community and our top tier mission. Graduate faculty and students are drivers of academic and scholarly excellence. I am particularly proud of the long and strong history of graduate student governance exemplified by the Graduate and Professional Student Association, a strong voice for the more than 5,000 graduate and professional students enrolled in more than 160 graduate programs and certificates today. I couldn't be more thankful for GPSA's leadership or more proud of your organization's accomplishments over the years. Graduate and professional education is thriving and it's a wonderful time to be an R1 Grad Rebel!

As thinkers, researchers, scholars, and creatives, graduate students are at the cusp of innovation and often the drivers of change. Our students are diverse, and your range of expertise is even more so -- and I couldn't be more proud of your determination, hard work, resiliency, innovation, and accomplishments. Today is a day to celebrate all of this and to foster communication and collaboration across disciplinary silos. The GPSA Research Forum is an event that inspires us to know more, to work harder, to be better --- as individuals, and as a graduate community of scholars.

Participation in this annual event helps develop your professional socialization skills and provides an opportunity to practice talking about your work to non-specialists in your field. It draws us all out of our disciplinary silos to encourage conversations and fosters collaboration. The work showcased at the Research Forum highlights graduate and professional student excellence, and is a reflection of the outstanding graduate and professional faculty and programs here at UNLV.

It is an honor to help support this great event, and to celebrate you, our graduate and professional students. You inspire me! I wish you a wonderful Research Forum and a successful remainder of your semester.

Go Grad Rebels!

All the best,

Kathryn Hausbeck Korgan, Ph.D.
Dean, UNLV Graduate College

2020 Graduate & Professional Student Research Forum

SCHEDULE OF EVENTS

Saturday, February 29, 2020

Research Forum

8:30am – 2:00pm

Student Union

Podium Sessions

Science Podium Session A:	8:45 AM - 11:45 AM	Room 207
Science Podium Session B:	9:00 AM - 12:00 PM	Room 222
Science & Engineering Podium Session:	9:00 AM - 12:00 PM	Room 218
Mechanical Engineering:	10:30 AM - 11:45 AM	Room 224
Social Science Podium Session A:	9:15 AM - 11:30 AM	Room 208C
Social Science Podium Session B:	8:45 AM - 12:00 PM	Room 209
Humanities and Fine Arts Podium Session:	8:45 AM - 12:00 PM	Room 211
Education Podium Session:	8:45 AM - 12:00 PM	Room 208B
Social Sciences and Hospitality:	8:45 AM-12:00 PM	Room 213

Poster Sessions

Education Poster Session:	9:00 AM- 11:45 AM	Ballroom
Social Science Poster Session A:	9:00 AM- 12:00 PM	Ballroom
Social Science Poster Session B:	8:45 AM- 11:45 AM	Ballroom
Social Science Poster Session C:	9:15 AM- 11:45 AM	Ballroom
Social Science Poster Session D:	8:45 AM- 11:45 AM	Ballroom
Science Poster Session A:	8:45 AM- 12:00 PM	Ballroom
Science Poster Session B:	9:15 AM- 12:00 PM	Ballroom
Science Poster Session C:	9:00 AM - 11:45 AM	Ballroom
Science Poster Session D:	8:45 AM- 11:45 AM	Ballroom
Science Poster Session E:	9:00 AM- 12:00 PM	Ballroom
Science Poster Session F:	8:30 AM- 12:00 PM	Ballroom

Luncheon and Awards Ceremony Noon – 2:00pm Ballroom

2020 Graduate & Professional Student Research Forum

TABLE OF CONTENTS

Podium Sessions	1
Science Podium Session A – Room 207	2
Science Podium Session B – Room 222	8
Science & Engineering Podium Session – Room 218	14
Mechanical Engineering – Room 224	20
Social Science Podium Session A – Room 208C	24
Social Science Podium Session B – Room 209	29
Humanities and Fine Arts Podium Session – Room 211	36
Education Podium Session – Room 208B	43
Social Sciences and Hospitality Podium Session – Room 213	50
Poster Sessions	57
Education Poster Session – Ballroom	58
Social Science Poster Session A – Ballroom	64
Social Science Poster Session B – Ballroom	70
Social Science Poster Session C – Ballroom	76
Social Science Poster Session D – Ballroom	81
Science Poster Session A – Ballroom	87
Science Poster Session B – Ballroom	94
Science Poster Session C – Ballroom	100
Science Poster Session D – Ballroom	106
Science Poster Session E – Ballroom	112
Science Poster Session F – Ballroom	118
Index	125

PODIUM SESSIONS



GRADUATE & PROFESSIONAL STUDENT RESEARCH FORUM

2020

**Science Podium Session A –
Room 207**



PRESENTATIONS:

8:45 – 9:00 AM	Cindy Kha, Life Sciences
9:00 – 9:15 AM	Bridget Elizan, Dental Medicine
9:15 – 9:30 AM	Joy McKenna, Life Sciences
9:30 – 9:45 AM	Philip Son, Dental Medicine
9:45 – 10:00 AM	Lucas James, Medicine
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Lorena Samentar, Life Sciences
10:45 – 11:00 AM	Sheila Mosallaei, Life Sciences
11:00 – 11:15 AM	Ghazal Rezaei, Dental Medicine
11:15 – 11:30 AM	Robert Pelletier, Life Sciences
11:30 – 11:45 AM	Taylor Gillis, Medicine

The Initial Spark in Eye Regeneration

Cindy X. Kha, Kelly Ai-Sun Tseng | Life Sciences

Electrical changes in the body can provide the initial step to drive the regeneration of injured tissues. These bioelectrical signals are generated through pumps driving charged molecules across cell membranes and contributes to the development of complex organs. It is known that the activation of a hydrogen pump, H⁺-V-ATPase, is required for the regeneration of tissues in multiple species. However, the involvement of H⁺-V-ATPase during the repair of injured eye tissue is not fully understood. To determine the role of the hydrogen pump, we use the African clawed frog, *Xenopus laevis*, for its well-studied and robust regenerative capabilities. Previously, we demonstrated the successful regrowth of functional eyes following surgery with structures similar to human eyes. Using this model, we assessed H⁺-V-ATPase function during eye regrowth. Loss-of-function studies with H⁺-V-ATPase inhibitors show impair eye regrowth due to a decrease in the number of proliferating cells at the surgery site. Our results indicate the requirement of H⁺-V-ATPase in regulating cell proliferation to restore eyes. Therefore, examining eye repair in *Xenopus* tadpoles provide further insight into the role of bioelectrical signals in regeneration. This suggest a potential target for the continued advancement in developing human eye regenerative therapies.

Interleukin-13 +2044G/A gene polymorphism in pre-treatment patients exhibiting short roots

Bridget Elizan | Dental Medicine

IL-13 has been implicated in the disease processes of asthma, allergic diseases, and periodontitis. All three conditions have been linked with external apical root resorption of teeth. The IL-13 +2044 G/A genetic variation has been shown to alter the amount of IL-13 gene expression. Alterations in the expressions of IL-13 may result in an increased risk of root resorption during orthodontic treatment for an individual. Increased root resorption during orthodontic treatment can lead to increased mobility of the teeth that may affect their overall longevity. Without potential genetic markers, pre-treatment radiographs of short roots are the only indication of a predisposition to root resorption during orthodontic treatment. Objectives: To assess the frequency of the alleles and genotypes of the IL-13 +2044G/A gene polymorphism in patients exhibiting short roots with no history of orthodontic treatment. Methods: A total of 52 subjects were categorized as exhibiting short roots (27) or normal roots (25), based upon the root morphology of incisors and mandibular premolars evident on 3D CBCT pre-treatment scans. Genomic DNA was isolated from buccal swab samples. The region encompassing the +2044 site was amplified and then separated using gel electrophoresis. Results: The allelic distribution showed no predominance in either short root or normal subjects. The heterozygote genotype (GA) was the most frequent, both for short root (11 of 27) and normal subjects (11 of 25), but without statistical significance. Conclusions: The findings from this study suggest that this polymorphism is not a major factor affecting the presence of short roots.

A novel negative feedback loop controls type three secretion in the bacterial pathogen *Shigella flexneri*

Joy McKenna, Helen J. Wing | Life Sciences

Globally, *Shigella* species are the second leading cause of diarrhoeal mortality. In the U.S., these etiological agents of bacillary dysentery have become a serious public health threat due to the low infectious dose, ease of transmission via the fecal-oral route, and increasing antibiotic resistance. To invade, *Shigella* and many other Gram-negative bacterial pathogens (i.e. *Salmonella*, *Burkholderia*, *Yersinia*) use a highly conserved needle-like type three secretion system (T3SS) to inject virulence proteins into the host cytosol. My research has uncovered a novel and unexpected negative feedback loop in the transcription cascade that controls the T3SS in *Shigella flexneri*. These findings are anticipated to improve our understanding of complex regulatory inputs and mechanisms that control the T3SS in *Shigella* and potentially related bacterial pathogens.

The Effects of Methylisothiazolinone (MIT) on Dental pulp stem cells (DPSC)

Philip Son | Dental Medicine

Objectives: Methylisothiazolinone (MIT) is a strong preservative commonly found in household products such as cosmetics, soaps and baby wipes. Recently, there have been numerous reports indicating that MIT causes contact dermatitis in humans. Here, we studied the effects of MIT using an excellent model, dental pulp stem cells (DPSC), which possess various differentiation pathways and sensitive to environmental changes.

Methods: The main objective of this study was to determine the effects of MIT on DPSC by observing cell growth and viability in different concentrations of MIT (0-75uM) at 1, 2, and 3 day time period.

Results: DPSC 11836 showed a dose-dependent increase response to MIT with 122% positive cell growth at 75 uM. Conversely, DPSC 11750 showed negative growth response to MIT at 25uM resulting a 20% decrease in cell population compared to control group. Similar to the cell growth experiment, DPSC 11836 showed positive viability responses to MIT (234% cell viability at 25 uM of MIT compared to control) while MIT caused significant decreases in cell viability in DPSC 11750, (53% decrease at 25 uM of MIT compared to control group).

Conclusions: DPSC 11836 and 11750 showed divergent cell growth and viability responses to varying concentrations of MIT exposure. Interestingly, DPSC gene expression profile showed that there was more NANOG expression in DPSC 11836 than DPSC 11750, which is critical for maintaining pluripotency. Follow up research may allow us to discover unknown mechanisms of MIT and its long term exposure to humans.

Occult Uterine Malignancy At The Time Of Surgery For Benign Gynecologic Indications: An Updated Systematic Review

Lucas James | Medicine

Study Objective:

To conduct an updated systematic review to estimate the prevalence of occult uterine malignancy, of any subtype, among women undergoing surgery for benign gynecologic conditions.

Design:

Systematic review

Patients or Participants:

Women undergoing surgery for presumed benign gynecologic conditions.

Interventions:

Hysterectomy or Myomectomy

Measurements and Main Results:

The PRISMA guidelines were followed in this systematic review. The search terms used were “occult malignancy” or “occult uterine pathology” paired with “morcellation” or “hysterectomy.” March 25, 2019 was the last date that articles were searched.

Inclusion criteria included any peer-reviewed journal articles reporting occult uterine malignancy rates at the time of surgery for benign conditions, regardless of whether morcellation was used or not. We excluded articles that were reported exclusively on women with pre-operatively diagnosed or suspected uterine malignancies.

Our search yielded a total of 233 journal articles, of which 53 met the criteria for a full-text review and 26 were included in the final systematic review. There were 338,206 patients across 9 countries that were included in these 26 studies. As a comparison, the previous systematic review done by the Agency for Healthcare Research and Quality (AHRQ) only included a total of 136,195 patients. The occult uterine malignancy rate was 0.24% (95% CI 0.08% – 0.46%) based on our meta-analysis.

Conclusion:

Based on this systematic review, incorporating over 300,000 patients, the overall prevalence of occult uterine malignancy at the time of surgery for benign gynecologic indications is approximately 0.24%.

Development of a novel Alzheimer's therapy

Lorena Samantar | Life Sciences

Alzheimer's disease is a progressive neurodegenerative disease affecting about 5.8M Americans and nearly 48M people worldwide. Currently, there is no cure for Alzheimer's. Available treatments only address the cognitive and behavioral symptoms but do not delay or stop the progression of the disease. One of the characteristics of Alzheimer's is the deposition of amyloid beta plaques in the brain. These plaques contribute to the eventual death of brain cells. At the Caberoy Lab, we develop a novel Alzheimer's therapy through amyloid beta clearance using the hybrid protein that we have engineered. Our question is, can we use our hybrid to treat Alzheimer's? To answer this, we administered our hybrid to a humanized mouse model that develops plaques similar to Alzheimer's patients. After 30 days of daily injection, we analyzed the brain by focusing on the part that is involved in learning and memory, the first to be damaged in Alzheimer's patients. We see a significant reduction of amyloid plaques in the brain of mice injected with the hybrid compared to the control. We also observe that more nerve cells are still present in the brain of mice injected with the hybrid compared to the control where we see a dramatic reduction of nerve cells. This implies that our hybrid reduces plaques and confers protection to the nerve cells. Our promising result is very exciting as we could be the first lab to develop a cure for Alzheimer's disease.

Bone Morphogenetic Protein Signaling in Centripetal Migration during *Drosophila melanogaster* Oogenesis

Sheila Mosallaei | Life Sciences

How do cells know when and where to move during tissue development? How do they interpret environmental cues to determine their identity, their behavior and movement? Cells in epithelia, the building blocks of tissues, form tightly connected layers, serving as protective sheets. We use development of the follicular epithelium during oogenesis of *Drosophila melanogaster* as a model system to understand what cues cause subsets of cells within an epithelium to pull away from their neighboring cells. My studies investigate the function of Bone Morphogenetic Protein (BMP) signals in cells that undergo a migration event, centripetal migration, in which a subset of cells deviate from their neighbors. The BMPs involved in centripetal migration in *Drosophila* have homologous counterparts in humans that have been linked to several forms of cancer. In order to determine whether BMPs control the migration of the cells, I have removed the ability of the cells to respond to BMP signals. To do this, I have genetically removed the primary BMP signal transducer, Mothers against decapentaplegic, using CRISPR. I use time-lapse imaging to follow centripetal migration in real-time to assess the affects that arise from loss of BMP signaling. Preliminary data show that the cells that are unable to respond to BMP signaling are unable to undergo centripetal migration normally. However, further analysis will be conducted to pinpoint the cellular process that is controlled by BMP signaling during centripetal migration. Overall, my research defines a novel role for BMPs in the context of centripetal migration during *Drosophila* oogenesis.

Effects of Generated Free Oxide Radicals on Mixed Salivary Biofilms

Ghazal Rezaei | Dental Medicine

Objectives: Microbial biofilms are a major component in the development of oral disease. Currently, the best way to disrupt biofilms is through mechanical manipulation, which is impossible in exposed dental pulps where disinfection is notoriously difficult to achieve. Significant quantities of free oxide radicals can be simply generated by passing low voltage current through titanium electrodes coated with tubular TiO₂. Here, mixed salivary microbial biofilms were grown and exposed for varying amounts of time to free oxide radicals to assess the level of biofilm disruption which could be achieved.

Methods: Mixed salivary biofilms were generated from human saliva samples spread on blood agar plates and then transferred to Luria broth after incubation. Broth was replaced with .09% saline and adherent bacteria were exposed to free oxide radicals generated by passing 6V current through a titanium ceramic probe. Exposure time points were 0, 15, 30, 100 and 300 seconds. Bacteria were then fixed in 10% formalin and stained with DAPI in order to visualize microbial cell number and distribution.

Results: Bacterial biofilms exposed to free oxide radicals for 15 or 30 seconds did not show significant reduction in the number or density of adherent bacterial cells. In contrast, bacterial biofilms that were subjected to 100 and 300 seconds showed a reduction in visible cell number and a reduction in the density of cell distribution.

Conclusions: Titanium electrolytic generated free oxide radicals demonstrated the capacity to disrupt mixed salivary microbial biofilms, indicating that they may be of utility in endodontic disinfection.

The influence of vegetative cover on microhabitat selection by the relict leopard frog

Robert Pelletier, Jef R. Jaeger | Life Sciences

The relict leopard frog (*Rana onca*) is endemic to southern Nevada and neighboring regions, but the species has suffered a substantial decline in overall distribution in recent decades. Population losses have been linked to the overgrowth of emergent, aquatic vegetation at some sites. Research by a previous graduate student attempted to quantify microhabitat selection by adult relict leopard frogs. Radio-telemetry was used to track movements of 34 frogs along 600 linear meters of stream. Vegetation cover by species and stream characteristics (riparian and stream width, and water depth) were measured along perpendicular transects at one meter intervals down the stream length at the beginning of the study. Shorter vegetation did not appear to impeded frog movement, so vegetation cover was measured at two heights, $< 25\text{cm}$ and $\geq 25\text{cm}$. The field effort during the previous project was extensive, but the data analysis lacked statistical rigor that hindered meaningful interpretation. We reanalyzed these data using bootstrapped logistic regression modeling, and explored the incorporation of explicit spatial components. Data were modeled by night and day since frogs were thought to behave differently during these times, and because day and night sampling events were autocorrelated. Our models indicated that frog occurrence decreased with cover of tall vegetation, and that tall vegetation appeared to be the primary driver of frog microhabitat use in the system.

Identifying Therapies That Boost Ewing Sarcoma Immunogenicity: A High Throughput Real-Time Immune Cell Killing Assay

Taylor Gillis | Medicine

Ewing Sarcoma (EwS) is the second most common pediatric bone cancer with a peak incidence occurring in the second decade of life. Treatment options for EwS consist of local tumor resection, radiation, and a regimen of several high-dose cytotoxic chemotherapy drugs. Cure rates for patients presenting with local and metastatic disease have stagnated in recent decades, with event-free 5-year survival rates at 70% and 30%, respectively. The dismal survival rate in metastatic patients points to a need for innovative treatment options in the field. Sarcomas are famous for being immunologically “cold” tumors, meaning, they elicit a poor host immune response. We hope to identify immune modulating drugs that enhance tumor recognition and generate an effective immune response. Utilizing a cell-based model, we performed a high throughput drug screen on EwS tumor cell lines. We then utilized the Incucyte cell-imaging platform to measure in real-time natural killer cell-mediated antitumor cytotoxicity. Drugs that increase immune cell-mediated killing of tumor cells will be advanced into further pre-clinical testing for bioactivity, safety, and efficacy. Ultimately, we hope to identify an innovative immunotherapy treatment option that improves cure rates of patients with Ewing sarcoma.

**Science Podium Session B –
Room 222**



PRESENTATIONS:

9:00 – 9:15 AM	Harjiv Singh, Kinesiology
9:15 – 9:30 AM	Amro Abdalla, Chemistry and Biochemistry
9:30 – 9:45 AM	Lauren Dickey, Physical Therapy
9:45 – 10:00 AM	Nicholas Ross, Kinesiology
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Michael Isaacs, Life Sciences
10:45 – 11:00 AM	Hui-Ting Shih, Physical Therapy
11:00 – 11:15 AM	James Anderson, Physical Therapy
11:15 – 11:30 AM	Rebecca Lim, Chemistry and Biochemistry
11:30 – 11:45 AM	Jacqueline Phan, Chemistry and Biochemistry
11:45 – 12:00 PM	Dustin Davis, Kinesiology

Maximal force production requires OPTIMAL conditions

Harjiv Singh | Kinesiology

One implication of the OPTIMAL theory of motor learning (Wulf & Lewthwaite, 2016) is that standardized motor performance assessments likely do not reflect maximal capabilities unless they are “optimized” with appropriate testing conditions. The present study examined the effects of three key motivational (enhanced expectancies, EE, and autonomy support, AS) and attentional (external focus, EF) variables in the OPTIMAL theory on maximum force production. In Experiment 1, a handgrip strength task was used. EE, AS, and EF were implemented, in a counterbalanced order, on consecutive trial blocks in an optimized group. A control group performed all blocks under neutral conditions. While there were no group differences on Block 1 (baseline), the optimized group outperformed the control group on all other blocks. In Experiment 2, participants performed two one-repetition maximum (1-RM) squat lift tests, separated by one week. Two groups had similar 1-RM values on Test 1 (neutral conditions). However, on Test 2, a group performing under optimized conditions (EE, AS, EF) showed an increase in 1-RM, while there was no change from Test 1 to Test 2 for a control group. We argue that standard test conditions do not produce true maximal performance. The findings corroborate the importance of key factors in the OPTIMAL theory and should be applied to ensure adequate strength performance assessment.

Key words: Enhanced expectancies, autonomy support, external focus, one-repetition maximum tests, handgrip strength, squat lift

Using a novel genetic mouse model to study the effect of Acid sphingomyelinase (ASM) on adipose tissue homeostasis

Amro Abdalla | Chemistry and Biochemistry

Recent advances in stem cell research elucidate the possibility of the use of genetic-based approaches to understand mechanisms related to tissue homeostasis. In our lab, we created a genetic knockout mouse model to study the effect of a plasma membrane lipid-modifying enzyme, acid sphingomyelinase (ASM) on maintaining healthy adipose tissue through regulating adipose stem cells differentiation into mature adipose cells. Previous work in our lab found that ASM plays a critical role in *C. elegans* life span and human cancer cells' survival and invasion. Data from our lab also showed that ASM regulates receptor tyrosine kinases (RTK) pathways such as insulin-like growth factor one receptor (IGF1R) signaling and Met signaling; however, the effect of ASM on mammalian stem cells is still unknown. My current work shows that inactivation of ASM reduces the pregonadal mouse adipose tissue mass by 4 folds compared to wild type controls. Moreover, Immunohistochemistry sections of pregonadal mouse adipose tissues display accumulation of adipose stem cell markers which indicates defectiveness in adipose stem cell differentiation in ASM knockout mice. Furthermore, stromal vascular fraction from ASM knockout mice showed 3 fold less in vitro differentiation potential to mature adipocytes. Next, I am aiming to explore the signaling pathway by which ASM regulates adipose stem cell differentiation. To this end, I will test whether ASM inactivation reduces different RTK signaling such as IGF1R signaling, MET signaling or AXL signaling. My research highlights the importance of acid sphingomyelinase in tissue homeostasis through modulating stem cell RTK signaling.

Exercise Associated Muscle Cramps: A Dissertation Proposal

Lauren Dickey Dr. Szu-Ping Lee | Physical Therapy

Exercise Associated Muscle Cramps (EAMCs) are painful phenomena that many physically active individuals experience with exercise. EAMCs are spontaneous and seemingly unpredictable, though researchers continue to look into risk factors and treatments that can predict or reduce one's cramp risk. The proposed dissertation aims to identify if factors like increased psychological stress and poor sleep are correlated with a higher risk of cramping, and to evaluate a manual therapy intervention on cramp alleviation. Toe cramps will be induced with electrical stimulation, and cramp risk will be measured by the minimum electrical stimulation frequency needed to produce the cramp. Participants will complete questionnaires measuring sleep duration and quality, anxiety levels, and psychological stress. All participants will then undergo the electrical stimulation testing protocol in order to measure cramp risk and to see if there are associations between those with high stress levels or low sleep to higher cramp risk. Finally, we will examine the effectiveness of a manual treatment intervention on alleviating stimulation-induced cramps. We hypothesize that high psychological stress levels and poor sleep will be significantly related to increased cramp risk. Also, we hypothesize that the manual intervention will be effective at alleviating muscle cramps and can serve as an alternative to muscle stretching.

Respiratory Responses to High Intensity Interval Exercise in Obese Adults

Nicholas Ross, Michael W.H. Wong, Dharini M. Bhammar | Kinesiology

Purpose: Obese adults experience low-lung volume breathing during exercise, which causes ventilatory constraints such as dynamic hyperinflation to occur during exercise. However, high intensity interval exercise is associated with less dynamic hyperinflation and thus deserves to be studied in obese adults. Therefore, the purpose of this study was to determine the effects of high intensity interval exercise on operating lung volumes and dynamic hyperinflation in obese adults.

Methods: Nine adults (5 non-obese, 27 ± 7 yr, BMI: $23 \pm 1 \text{ kg} \cdot \text{m}^{-2}$; 4 obese, 26 ± 4 yr, BMI: $35 \pm 2 \text{ kg} \cdot \text{m}^{-2}$) completed high intensity interval exercise consisting of eight 30s bouts at 80% of maximal work rate interspersed with 45s recovery. Pulmonary function testing was completed on a separate visit to measure total lung capacity (TLC). Inspiratory capacity (IC) measurements were completed at rest and during all intervals to assess operating lung volumes and dynamic hyperinflation. End-expiratory lung volume $((\text{TLC} - \text{IC}) / \text{TLC} * 100)$, end-inspiratory lung volume $((\text{TLC} - \text{IC} + \text{Tidal Volume}) / \text{TLC} * 100)$ and dynamic hyperinflation $((\text{Rest EELV} - \text{Exercise EELV}) / \text{Rest EELV} * 100)$ were calculated.

Results: End-inspiratory lung volume was higher in the non-obese adults compared with obese adults during high intensity intervals (75 ± 4 vs. $68 \pm 6\% \text{ TLC}$; $p = 0.001$). End-expiratory lung volume was 27% lower in the obese adults compared with non-obese adults throughout the intervals (39 ± 4 vs. $53 \pm 3\% \text{ TLC}$; $p < 0.001$). Dynamic hyperinflation did not differ between the two groups (non-obese: 5 ± 6 vs. obese: $3 \pm 13\%$; $p = 0.927$).

Conclusions: Although obese adults experience low lung volume breathing when compared to non-obese, dynamic hyperinflation does not differ between the groups during high intensity interval exercise. Thus, interval exercise may be a viable exercise option for obese adults.

Different costs for different walks

Michael Isaacs | Life Sciences

In the animal kingdom, walking around on two legs is a rare locomotor strategy. Walking robots, birds, and humans using leg prosthetics are examples of the different two-legged (bipedal) systems. My research compares these bipedal systems at different walking speeds to better understand the mechanical cost required to move the mass consistently. My studies look to answer two primary questions: 1) Are mechanical costs similar between the systems at similar movement speeds? 2) Is the effect of speed the same across the human walking speed range?

When people, birds, and (some) robots walk, they alternate between steps (one foot on the ground), and step-to-step transitions (both feet on the ground). This pattern of leg movement results in an up-and-down movement of the body while it moves in a forward direction – this bobbing pattern is distinctly different from moving in a straight line like that of a rolling ball. It's important to distinguish between these two movement patterns because when we consider how the legs are supporting the body weight, we are able to calculate a mechanical cost of transport. Mechanical cost is simply the amount of physical work required by the legs interacting with the ground to keep the body mass moving at a near-steady speed.

We have found that mechanical costs of transport differ between birds, humans, and robots. In addition, walking speed matters: humans maintain a relatively unchanging cost between slow and intermediate speeds while both birds and contemporary robots incur much higher costs at fast walking speeds.

Physical Therapy After Lower Extremity Amputation: Predictors and Outcome Implications

Hui-Ting Shih | Physical Therapy

The study aims to explore characteristics of patients who received physical therapy after amputation and to retrospectively determine perceived function and quality of life in individuals who did and did not receive PT after amputation.

Forty male and 8 female participants were recruited. All participants completed the following surveys: Amputee Perception Survey, Short-Form 36 survey (SF-36), mobility section of the Prosthesis Evaluation Questionnaire (PEQ), and Fear of Falling Avoidance Behavior Questionnaire (FFABQ). SF-36 scores indicate perceived quality of life (QoL).

Of our participants, 38 received physical therapy (YesPT) and 10 did not (NoPT); the mean age for the YesPT group was 59.5 years and 51.3 years for the NoPT group. YesPT group consisted an equal distribution of individuals with unilateral above the knee (AK; 42.1%) and below the knee (BK; 42.1%) amputations, and 15.8% of higher level (i.e. hip disarticulation) or bilateral amputations. The NoPT group consisted of 10% AK and 90% BK amputations. A higher percentage of individuals in the YesPT group lost their limbs due to vascular causes than NoPT (36.8% vs 20%). There were no statistically significant differences in any surveys between the two groups.

Presence of more complex amputation (i.e. high level and bilateral) and a vascular etiology were shown to be potential predictors to receiving PT treatment after amputation. While these characteristics have been shown as detrimental to physical function, both the NoPT and YesPT groups in this study exhibited similar levels of perceived function and quality of life.

A treadmill-based method simulates trips differentiating the fall recovery response in young and middle-aged to older adults

James Anderson | Physical Therapy

Trips and slips account for almost 60% of falls in older adults (Berg et al, 1997). The consequences of these traumatic events create a significant physical, psychological, and economic burden in adults' ≥ 65 years old (Stevens, Corso, Finkelstein, & Miller, 2006). Research has consistently shown younger adults perform better on balance tasks than older adults (Balogun, Akindele, Nihinlola, & Marzouk, 1994). However, limitations associated with delivering a perturbation that is both repeatable, reproducible during the same phase in the gait cycle fail to accurately simulate a real-life trip. The goal of this study was to validate a new trip-simulating protocol that can differentiate young and older adults. Ten healthy young adults (18-30 years) and ten middle-aged to older adults (≥ 50 years) were recruited as a sample of convenience. Participants were provided with an unexpected perturbation on a treadmill while walking at a self-selected speed to assess their balance responses. There was a main effect of age between groups on falls ($p = < .001$), peak trunk flexion ($p = .033$), duration after onset for peak trunk flexion angle ($p = .032$). These findings suggest that our protocol can differentiate between young and middle-aged to older adult's recovery response when subjected to a trip. This differentiation is important because it may guide Physical Therapy treatments to improve these impairments in order to prevent future falls.

Beryllium Aqueous Solubility beyond Ksp

Rebecca Lim | Chemistry and Biochemistry

Beryllium metal ion has recently shown interesting biological activities. It induces p53-mediated cell cycle arrest in some cancer cells, and it effectively inhibits GSK3. However, further biochemical studies of beryllium are challenged with its limited aqueous solubility in near physiological conditions. Beryllium hydrolyzes rapidly, producing insoluble $\text{Be}(\text{OH})_2$. With the solubility product of $\text{Be}(\text{OH})_2$ being 6.92×10^{-22} , the maximum concentration of soluble Be^{2+} available at pH 7 is only about $0.07 \mu\text{M}$, which is far below the usable concentration by many of biophysical techniques. We tested several common factors known to increase aqueous solubility of metals and observed the solute-solvent interactions had the most promising result in increasing beryllium solubility¹. In typical cell culture medium supplemented with protein serum, up to 0.5 mM BeSO_4 was soluble at pH 7. More interestingly, beryllium solubility increased in protein-free solutions with addition of SO_4^{2-} ion, suggesting a Diverse Ion Effect relationship between Be^{2+} and SO_4^{2-} . These findings on beryllium solubility will benefit biochemical studies of beryllium at molecular level.

Why the Foul Bowel? The Effects of Sex Differences on *Clostridioides Difficile* Infection

Jacqueline Phan | Chemistry and Biochemistry

Clostridioides difficile infection (CDI) is responsible for the majority of antibiotic-associated diarrhea, a potentially lethal outcome. In recent years, overall incidences of CDI have risen to the point of surpassing methicillin-resistant *Staphylococcus aureus* (MRSA) as the most common hospital-associated infection. CDI affects over 500,000 people per year in the United States, resulting in over 29,000 deaths from CDI-related complications. This in turn contributes to a projected \$4.8 billion cost burden to the U.S. healthcare system.

The bacterium *Clostridioides difficile*, the causal agent of CDI, can form spores that act as a trojan horse. Once spores enter the gut, they can “hatch” or germinate into toxin-producing cells. Naturally occurring cholesterol-derived bile salts from the liver can modulate the germination process. Previously, cholesterol-derived sex hormones were also found to inhibit spore germination. Interestingly, studies have consistently shown that female patients are more susceptible to contracting CDI than their male counterparts. Since other gastrointestinal diseases have been linked to differences in sex hormones, it is possible that they also affect CDI severity. Mice have been used as a standard model for human diseases including CDI. In this study, we investigate the impact of sex hormones on CDI severity by tracking the four stages of the female estrous cycle: metestrus, diestrus, proestrus, and estrus. These stages are dictated by changes in sex hormone levels, which may affect bile salt and gut microbiota composition, thus potentially altering CDI progression. The implications of this study can be used to refine CDI risk assessment and treatment.

Effects of Strawberries on LDL Cholesterol and Insulin Resistance in Adults with the Metabolic Syndrome

Dustin Davis, Scofield, H., Betts, N., Izuora, K., Basu, A.
| Kinesiology

Objectives: Consuming berries is linked with lower markers of cardiovascular disease (CVD) in clinical trials. We examined the dose-response effects of two strawberry doses on low-density lipoprotein-cholesterol (LDL-C) and insulin resistance, two risk factors for CVD, in adults with the metabolic syndrome. **Methods:** In this 14-week randomized controlled crossover study, adults with the metabolic syndrome were assigned to one of the three arms for 4 weeks separated by a one-week washout period: control powder, one serving strawberries (13 g powder/day), and 2.5 servings strawberries (32 g powder/day). The freeze-dried powders were blended in water, and participants consumed half the daily dose in the morning and half in the evening. Participants were instructed to follow their usual diet and lifestyle while refraining from consuming other berries and related products throughout the study. **Results:** Thirty participants completed all three phases of the trial (height: 167.4 ± 15.3 cm, weight: 90.8 ± 22.4 kg, BMI: 33.1 ± 4.2 kg/m², waist circumference: 109 ± 12.5 cm, HbA_{1c}: $5.8 \pm 0.2\%$). Outcome measures were analyzed using a multivariate analysis of variance with statistical significance set at $p < 0.05$. Preliminary data indicate a significant reduction in the homeostatic model of assessment of insulin resistance (HOMA-IR) following the 2.5 servings of strawberries when compared to the 1 serving of strawberries and control phases. **Conclusions:** These data suggest that consuming two-and-a-half servings of strawberries daily for four weeks significantly improved insulin resistance in adults with the metabolic syndrome. **Funding Sources:** Supported by the California Strawberry Commission.

**Science & Engineering Podium
Session – Room 218**



PRESENTATIONS:

9:00 – 9:15 AM	Sayan Sakhakarmi, Civil and Environmental Engineering and Construction
9:15 – 9:30 AM	Ali Khodabandelu, Civil and Environmental Engineering and Construction
9:30 – 9:45 AM	Dalton McCaffrey, Geoscience
9:45 – 10:00 AM	Anthony Feldman, Geoscience
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Rubab Saher, Civil and Environmental Engineering and Construction
10:45 – 11:00 AM	Ngoc Luu, Geoscience
11:00 – 11:15 AM	Abid Hussain, Civil and Environmental Engineering and Construction
11:15 – 11:30 AM	Amanda Ostwald, Geoscience
11:30 – 11:45 AM	Lauren Parry, Geoscience
11:45 – 12:00 PM	Nicole Martin, Civil and Environmental Engineering and Construction

Wearable Tactile System for Improved Hazard Perception in Construction Sites

Sayan Sakhakarmi | Civil and Environmental Engineering and Construction

As far as construction safety is concerned, the identification and rapid communication of potential hazards before they lead to an accident is crucial. Well-informed workers can promptly take preventive actions and ensure their own safety. Hence, researchers have developed various approaches to detect potential onsite hazards. However, relatively insufficient attention has been given to communicating the detected hazards to workers at risk. Therefore, this research aims to establish a tactile-based communication protocol, which can be used in noisy environments, in order to overcome the present difficulty of workers in perceiving hazards. To do this, the study uses a wearable, tactile-sensing system as a means of communication. The developed wearable system is composed of vibration motors, which are wirelessly controlled using Wi-Fi enabled Arduino boards. In this experimental study, the system was tested to determine its reliability in communicating information related to potential collision accidents on construction sites, to enable quick reactions from workers. The field experiment tested various tactile signals containing information about the direction of the approaching vehicle, type of vehicle, and intensity of hazard. The test results show that the system is reliable in communicating hazard information to workers and allowing hazard perception to be robust, without being limited by adverse construction environments (i.e., limited hearing and vision). The implementation of such a hazard communication system together with a hazard detection system would significantly reduce the number of fatalities and injuries related to collisions on construction sites, and thus, ensure safer work zones for workers.

Developing a Simulation Model for Lifting A Modular House

Ali Khodabandelu | Civil and Environmental Engineering and Construction

In recent years, modularization, as an effective method of construction, has gained in popularity and received significant attention from the construction industry. Although modularization can provide a variety of advantages, difficulties exist, especially with respect to implementation. One of the critical difficulties pertains to the large sizes of modular components, resulting in challenges associated with shipping processes. Any accident during the shipping processes of large modules can have detrimental consequences in the costs, schedules, and safety of the affected construction projects. Despite their significance, the lifting and transporting of modular buildings and modular components have received relatively insufficient attention. In this regard, this paper aims to introduce the major challenges in lifting and transporting the modules. A sample study is presented, in which the lifting operation of a modular building from an actual project (i.e., the University of Nevada, Las Vegas' Solar Decathlon 2020 modular house) is structurally simulated. To overcome the difficulties associated with ascertaining the center of gravity for modular parts, this simulation investigates various locations of lifting points, and identifies the best locations for the lifting process. This study will help construction engineers and practitioners to better understand effective approaches for lifting the modules of modular projects.

Geochemical Distribution and Petrogenesis of Critical Metal Granitic Pegmatites from the Virgin Mountain Pegmatite Field, Nevada – Arizona
Dalton McCaffrey | Geoscience

Critical metals (e.g., Li, Be, Nb) are vital to modern life and increasingly common green technologies, and are deemed critical because of their irreplaceability, important end uses, and significant supply restrictions as a result of social, political, and/or technological barriers. The processes that form granitic pegmatites, very coarse-grained (often >5 cm in diameter) igneous rocks formed from granitic magmas, also concentrate a number of the critical metals into distinct minerals and potentially minable forms. However, these rocks remain poorly understood in terms of the geologic processes involved in their formation.

The Virgin Mountains on the border of Nevada and Arizona hosts an understudied pegmatite field with known critical metal enrichments. Both “barren” pegmatites lacking critical metal enrichment and critical metal-enriched pegmatites form geochemically and mineralogically distinct trends within this field. This bimodal occurrence is not uncommon in critical metal bearing pegmatite fields but the relationship between the Virgin Mountains pegmatites and the controls on their distribution pattern remains poorly constrained. In addition, the source of these pegmatites, whether derived from a granitic pluton or low-percentage melting origin, remains unknown. Understanding both the distribution of critical metal enrichments and the sourcing of the magmas that formed these pegmatites is necessary for exploration for potentially more enriched critical metal bearing pegmatites in the Virgin Mountains and elsewhere.

This study presents new field and whole-rock geochemical data, zircon trace element and U-Pb data, and garnet mineral chemistry for the Virgin Mountains pegmatites and uses this data to outline a model for their formation.

Using Terrestrial Field Environments to Understand Weathering on Mars
Anthony Feldman | Geoscience

On Mars a plethora of instruments, both on the surface and in satellites, have documented the presence of iron and magnesium rich silicates and clay minerals and siliceous amorphous materials that lack mineral structure. Clay minerals require interaction with water to form, and unlike the majority of clay minerals on Earth’s surface a large fraction of Martian clay minerals lack aluminum as a major constituent cation. To understand how these materials might have formed and what they can tell us about past environmental conditions on the Martian surface, we can turn to the rare environments on earth that possess similar chemical makeups to those observed across much of Mars. Here we present preliminary results from two investigations of silicate weathering within iron and magnesium rich and aluminum poor soils. The first encompasses a look into how clay minerals and amorphous materials develop and change over time within these soil environments. The second details how the very initial stage of breakdown of the iron and magnesium silicate olivine varies with changes in environmental conditions, and compares this to controlled weathering of this mineral within a laboratory environment. Our results indicate that the amorphous component is likely an intermediate weathering product, forming through water-interaction with primary iron and magnesium rich minerals such as olivine and serpentine, then transitioning into crystalline clays with time. This sequence also appears to have some dependence on temperature and water saturation, with the transition from amorphous to crystalline clays not occurring in continuously saturated soil conditions.

Trend Analysis of Sky View Factor, Land Surface Temperature, and Evapotranspiration in Las Vegas Valley

Rubab Saher, Haroon Stephen, Sajjad Ahmad | Civil and Environmental Engineering and Construction

Las Vegas have undergone significant development in the past two decades in the form of pavements and buildings. Surface energy of the city has changed due to urbanization that plays crucial role in urban heat island effect and in altering the energy for evaporation and transpiration. This study analyzes the trends of land surface temperature (LST) and evapotranspiration (ET) due to presence of urban characteristics. Urban characteristics are quantified using sky view factor which depicts the presence of buildings as the amount of sky visible to the surface. LST is estimated using remote sensing algorithm. ET data has been acquired from the Earth Engine Evapotranspiration Flux (EEFLUX) database. This analysis is done between Summer 2002, and 2017. Mann Kendall's test and Sen's slope has been used for trend analysis. This research reveals that the presence of urban characteristics decreases ET and increases LST potentially due to the decrease in direct solar radiation. This study is insightful in understanding the effect of buildings, and pavements on urban thermal comfort and irrigation water demand in arid regions.

Keywords: Sky view factor; urban irrigation water demand; arid regions; Las Vegas valley

Assessing the fate of salinity in Walker Lake, NV

Ngoc Luu, Elisabeth M. Hausrath, Kip K. Allander, Michael R. Rosen, Angela Paul, Thomas F. Bristow | Geoscience

With no known outflows other than evaporation, Walker Lake has been subjected to anthropogenic desiccation since 1920. Water diversions from Walker Lake for agriculture have dropped lake levels, while increasing up total dissolved solids (TDS) concentrations to over 20,000 mg/L, impacting the aquatic ecosystem. To combat further degradation of the water quality at the lake, Congress passed the Walker Basin Restoration Program in 2009 with the intent to reduce TDS concentrations to a goal of 12,000 mg/L. In a joint effort to protect Walker Lake, agencies such as the United States Geological Survey, Walker Basin Conservancy, and the Walker River Paiute Tribe are monitoring water quality and quantity, obtaining water rights, and improving water management practices to increase flows into the lake. With the decline in lake levels, salts have been deposited along the shoreline of Walker Lake, but little is known about how much salt is present on the dry shoreline. This is especially important when determining whether or not water quality will be impacted if these salts were to re-dissolve when lake levels rise. Field and laboratory techniques were used to identify the lake bottom and shoreline sediments. These minerals were then used in combination with major ion chemistry, stage, volume, and conductivity from the National Water Information System (NWIS) in PhreeqC to predict future TDS concentrations as lake levels increase, and to calculate saturation indices to understand the geochemical controls that these minerals may have on Walker Lake.

Science & Engineering Podium Session – Room 218
11:00 AM – 11:15 AM

Accumulation of Trace Organic Compounds and Antibiotic Resistance Genes in Plants Irrigated with Reclaimed Water

Abid Hussain, Dale Devitt, Haroon Stephen, Sajjad Ahmad, Daniel Gerrity | Civil and Environmental Engineering and Construction

The utilization of treated wastewater as an alternative to conventional irrigation water is considered as a major source of dissemination of trace organic compounds (TOrcs), antibiotics, and antibiotic resistance genes (ARGs) in the environment. This study discusses the preparation and implementation of agroecosystem to monitor 13 TOrcs in treated wastewater from Ultrafiltration (UF) and Ozone (Oz) treatment. The irrigated soil and structures of tomato and spinach plants grown using this agroecosystem are analyzed for accumulation of TOrcs. The agroecosystem consists of five replicate soil and control pots. Additionally, two parallel hydroponics systems are used for soilless growth. The results show that under ambient conditions, TOrcs are accumulated in non-edible parts of plants whereas no compound was found in edible parts. When the concentrations of TOrcs were spiked above 10 to 50 times the ambient concentrations, low levels of benzotriazole, meprobamate and sucralose were detected in tomato fruit. These low concentrations were partially mitigated by reclaimed water followed by tap water irrigation (sequential irrigation). This study can assist in evaluating the viability of water reuse for agricultural applications and help address food and water scarcity. This agroecosystem can be used to address the risks associated with TOrcs and ARGs dissemination in environment through quantitative information critical to assess their potential human health implications.

Science & Engineering Podium Session – Room 218
11:15 AM – 11:30 AM

Chassignite And Nakhlite Parental Melts Determined From Melt Inclusion Analysis

Amanda Ostwald | Geoscience

Meteorites from Mars preserve information about the composition of the magma that formed them, as well as the composition of the martian mantle and crust. The nakhlite and chassignite martian meteorites comprise the largest known sample suite that is thought to originate from a single location on Mars. However, little is known about how the nakhlites and chassignites are related or the magmatic compositions that formed them. We will study the magma compositions of the nakhlite and chassignite meteorites to find out whether they are genetically related and to characterize the chemistry of their mantle source(s). In order to determine the chemistry of the nakhlite and chassignite magma compositions, we will conduct analyses on melt inclusions present in the samples. Melt inclusions are pockets of magma that are trapped in crystals as they form. Using an electron microprobe analyzer and a laser-ablation inductively coupled mass spectrometer, we will determine the major, minor, and trace element abundances present in the melt inclusions. We have found that the chassignite and nakhlite magma compositions are similar, although it is likely that chassignites formed prior to nakhlites. Both chassignite and nakhlite magma compositions are enriched in the element potassium, which may be a characteristic of a shared mantle source. Constraining the magmatic composition of the nakhlite and chassignite meteorites will in turn constrain heterogeneities present in the martian mantle and crust. Broadly, we will elucidate the composition of Mars as well as the processes that formed it.

Paleoecology Of Columbian Mammoths (*Mammuthus Columbi*) In Southern Nevada And California: How Terminal Pleistocene Ecosystems Shaped Mammoths At The Population Level

Lauren Parry, Stephen M. Rowland | Geoscience

We use this study to examine the paleoecology of the Columbian mammoth (*Mammuthus columbi*) on the individual and population level, emphasizing factors internal to their ecosystem that may have contributed to their extinction. We test a novel hypothesis developed by Ripple and Van Valkenburgh (2010) that seeks to explain the extinction of the Pleistocene megafauna at the end of the last Ice Age by evaluating trophic relationships that may have made animal populations unstable. The more conventional hypotheses for megafaunal extinction include human over-kill and climate-change-induced ecological stress, however they both rely on the assumption that population sizes of megafaunal herbivores were resource-dependent. Conversely, if mammoth population sizes were controlled by predation, any shift in food web structure could cause ecological collapse mediated by prey-switching. On the individual level, we use CT scan images of Columbian mammoth tusks from the Las Vegas Formation to test if these populations of mammoths were resource-dependent or kept at low densities via predation by determining the age of sexual maturity. In African elephant populations (*Loxodonta africana*), sexual maturation is postponed in times of low resource availability and severe stress. In contrast, substantial predation pressure would select for earlier ages of maturation. To test this hypothesis at the population level, we evaluate time-averaged assemblages of fossil Columbian mammoth molar teeth from the Las Vegas Formation and La Brea Tar Pits to assess population dynamics and mortality patterns. Pleistocene megafaunal predators may have applied top-down, predator-prey controls on Columbian mammoth populations that would have kept population sizes well below the carrying capacity. Results from this study, and other author's datasets from Columbian mammoths and mastodons (*Mammuth americanum*) in the Midwest suggest that during the Late Pleistocene, proboscidean population sizes were controlled from the top of the food chain down. Shifts in food web structure toward the Holocene may have made individual populations unstable, and prone to extinction. The ultimate cause for the Pleistocene megafaunal extinction remains unclear, however, we are able to add regional data to the larger framework of mammoth paleoecology.

Biological Reduction of Chromate, Nitrate, Chlorate, and Perchlorate In the Presence of High Levels of Salinity

Nicole Martin | Civil and Environmental Engineering and Construction

Background/Objectives.

Biological reduction of perchlorate has been studied intensively in the last two decades. An unresolved issue is the biodegradation of perchlorate under high salinity conditions, such as those found in ion-exchange brines. Although there are at least two reports of perchlorate degradation at 3% (30,000 mg/L) salinity, most reports have found that at salinity levels between 0.5% -1%, perchlorate reducing bacteria growth reduces by at least 50%. Some researchers have reported that salt concentrations exceeding 4% inhibits perchlorate reduction completely. In this research, the biological reduction of several co-occurring contaminants (COCs) (e.g chromate= 110 mg/L, nitrate= 300 mg/L, chlorate=30,000 mg/L and perchlorate=3000 mg/L)) in the presence of > 5% salinity is investigated using various substrates and conditions.

Approach/Activities.

Batch microcosm tests were performed using emulsified oil and acetate as substrates. Borehole soil cuttings and groundwater obtained from an actual contaminated site was used in the testing. Microcosm testing explored the impact of various dilution factors and substrate type on the biodegradation of the COCs. Bioaugmentation was needed as the number of bacteria found at the depth studied was very low.

Results/Lessons Learned.

Without bio-augmentation, the contaminants could not be biologically reduced after 172 days of incubation. Bio-augmented microcosm where the contaminated groundwater was not dilute (4.6% salinity) showed minimal degradation. Diluting the groundwater with tap water promoted complete degradation of chromate within 11 days and nitrate and chromate within 22 days for the 1.8% salinity water. For higher dilutions, degradation was more than twice as fast.

**Mechanical Engineering – Room
224**



PRESENTATIONS:

10:30 – 10:45 AM	Fengjie He, Mechanical Engineering
10:45 – 11:00 AM	Pouya Shojaei, Mechanical Engineering
11:00 – 11:15 AM	Emma Chao, Mechanical Engineering
11:15 – 11:30 AM	Kimberly Gonzalez, Mechanical Engineering
11:30 – 11:45 AM	Yihong Zhao, Mechanical Engineering

Highly Sensitive & Selective Detection of Organophosphate Nerve Agent and Pesticide based on a reusable Liquid-Crystal optical sensor

Fengjie He | Mechanical Engineering

Organophosphates (OPs) are a class of pesticides and chemical warfare, several of which are highly toxic. Based on the newest report, there are nearly three million poisonings per year resulting in two hundred thousand deaths around the world. Inspired by the Liquid Crystals (LCs)' extraordinary properties, we employed a customized LCs sensor to detect OPs with high sensitivity & selectivity, fast response time, and reusability. As proof of our research, four different measurements were operated in the experiments: sensitivity, response time, selectivity, and reusability. The results showed that the limit of detection (LOD) of our proposed sensing method can selectively detect OPs lower to the 10ppb concentration in 25 seconds in four different vapors (OPs, Steam, Ethyl alcohol, and Methylbenzene), which was far lower than the US EPA safety levels for OPs and faster than the other competitors. Further, the sensor can be recovered by the nitrogen gas treatment in 30 seconds.

Keywords: organophosphates, liquid crystal sensor, orientation transitions, reusability

Effect of Bolted Joints on Shock Propagation across Structures under Medium Impact Loading

Pouya Shojaei | Mechanical Engineering

A bolted joint is one of the most common fastening techniques. While the behavior of bolted joints under static or quasi-static conditions is well documented, their behavior under shock/impact loading is not well-understood. In many applications, where a bolted joint connects a sensitive component to the rest of a structure, it is important to interpret shock propagation through the bolted joints. This problem is further complicated owing to the fact that a bolted joint exhibits multiple types of nonlinearities, due to the interaction between the bolts and clamped parts, thread friction between the shank and nut, pre-tension, damping characteristics, and interference with the hole. This study was focused on developing computational techniques for understanding shock propagation through a bolted joint. As a case study, the behavior of a bolted joint within a two-component cylindrical structure subjected to impact loading was considered. A finite element (FE) model of the fixture was developed. Two different approaches were considered. The first one modeled the bolt assembly as one part. The second model had the bolt and nut as separate parts. In this model, the tie contact between the bolt shank and the nut was defined using a shear failure criterion. Both models included bolt pre-tension. The two models were compared based on energy balance, acceleration signal, and displacement at the base of the fixture. The results indicated that the model with the separate bolt and nut resulted in a more realistic performance.

Discrete Vortex Modeling of Inviscid Flow in Aerodynamic Flutter

Emma Chao, Dr. William Culbreth | Mechanical Engineering

Aerodynamic flutter is the unstable oscillation of a body caused by the interaction of aerodynamic forces, structural elasticity and inertial effects induced by vortex shedding. The effects of flutter can result in structural failure of aircraft wings and control surfaces. To prevent such catastrophes, engineers have consistently worked to develop an accurate model of flutter on aircraft structures. Currently, models of flutter require extensive time and computational power. A simple and efficient model of flutter can be obtained by applying discrete vortex method to a two-dimensional flat plate with a torsional spring constant at its center. A computer program was written to complete all the necessary calculations to simulate the motion of the air past the flat plate and find the aerodynamic forces induced on the plate. An image of the flow field is displayed on the screen to demonstrate the plate's orientation and the wake behind it. This image updates with every time step providing a real-time video that allows the viewer to visualize the motion of the plate and predict when it will fail due to torsional stress. The results of this study support the potential for utilizing discrete vortex flutter simulations at an early stage in the aircraft design process to mitigate the effects of flutter and prevent disasters in flight.

Capture of Decay Heat to Produce Thrust in a Nuclear Propulsion Rocket

Kimberly Gonzalez | Mechanical Engineering

Nuclear thermal rockets (NTR) have been explored as an alternative to chemical rockets to provide propulsion for missions to Mars and throughout the solar system. They employ a thermal nuclear reactor to heat hydrogen propellant which is ejected through a Laval nozzle to generate thrust. Nuclear reactors generate radioactive fission products during operation and the decay of these isotopes create significant decay heat once the reactor is shut down. In a nuclear thermal rocket, some hydrogen propellant must be passed through the reactor after shutdown to remove decay heat to prevent overheating of reactor components. The mass flowrate of this propellant is insufficient to generate supersonic exhaust velocities and an insignificant amount of thrust is produced. Hydrogen propellant is a precious resource in a nuclear rocket since large amounts are consumed during each “burn” of the rocket engine. To solve this problem, a variable-area Laval nozzle was modeled to see if useful thrust could be generated for the rocket.

The addition of a variable-area nozzle to a nuclear thermal propulsion rocket will be complicated since the temperatures in the reactor chamber typically exceed 2700 K. For a 60-minute engine burn of the reactor, a 0.4% increase in cumulative impulse may be worth the expense and complication of adding a variable-area nozzle to the design.

Programmable quasi-random nanostructured coating on flexible solar cells with omnidirectional broadband improvement for photon management

Yihong Zhao | Mechanical Engineering

As the known of the Shockley-Queasier limit, over 90% of widely used silicon crystalline based solar cell only achieve the theoretical efficiency around 30%. Quasi-random structures emerge as an ideal candidate since they combine the broadband wide-angle absorption enhancement and strong, customizable enhancement for desired wavelength windows. However, the convenient strategy to generate deterministic quasi-random structures with controlled Fourier spectral properties is based on symbolic substitutions, which is a complex and indirect method. Moreover, the following fabrication process is: 1) expensive, 2) time-consuming, 3) restricted to a small area.

In this presentation, we demonstrate a kind of designed quasi-random structure, which were designed by topology optimization based on mathematical algorithms and directly fabricated to achieve a highly efficient light trapping capacity. In here, by applying the programming algorithm, famous quasi-random sequences such as Rudin-Shapiro, and other sequences could be selected from mathematics field and transferred to be binary sequences by using advanced computer language (MATLAB and Python). By burning the optical discs, this pre-programmed binary sequence which can be an arbitrary probability distribution is directly burned into a corresponding pattern with designed “islands” and “pits” over a large area almost. This method allows us to (1) quickly explore various control parameters, (2) optimize the performance over the desired wavelength ranges, and (3) simulate the optimization results.

The best resultant structures (Rudin-Shapiro structure) could reduce 11% on reflectance and improve 13.8% short circuit current (I_{sc}) which led 12.24% improvement of power conversion efficiency on amorphous silicon thin-film solar cell devices.

**Social Science Podium Session A –
Room 208C**



PRESENTATIONS:

9:15 – 9:30 AM	Andrea Fink-Armold, Psychology
9:30 – 9:45 AM	Rachel Ali-Rodriguez, Psychology
9:45 – 10:00 AM	Karli Nave, Psychology
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Ryan Wirt, Psychology
10:45 – 11:00 AM	Kendra McGlothen, Psychology
11:00 – 11:15 AM	Jeffrey Barker, Psychology
11:15 – 11:30 AM	Elaine Aquino, Psychology

Gender Stereotyping Research: A Call for Methodological Advancement

Andrea Fink-Armold | Psychology

Research in gender stereotyping is a complex and constantly evolving field of study. Over the past 50 years, numerous theories have been developed, expanded, and refined, allowing researchers to examine the development and effects of gender stereotypes from a wide variety of perspectives. Within the framework of these theories, an intricate web of interconnected content domains and gender categorizations have been built. The constructs within this multidimensional and multifactorial web are explored using a range of tools designed to capture the intricacies of gender stereotyping, both as self-schemas and as social attitudes. Through the use of these instruments, researchers have been able to identify a vast range of cognitions and behaviors affected by gender stereotypes and thus to examine the wide-spread effects of gender stereotyping. However, in order to continue to make advances in the field of gender stereotype research, researchers must work in accordance with societal changes. As social structures evolve and perspectives on gender and stereotyping change, so must the ways in which we conceptualize, define, and examine these constructs and their effects. Similarly, as our research procedures advance, the confounding effects of new technologies, research personnel, and participant samples on established instruments must also be examined and adjusted accordingly. The next generation of gender stereotype researchers must continue to develop, expand, and refine the methods created by the innovators in this field.

Restructuring Of The Axon Initial Segment In A Mouse Model Of Developmental Seizures

Rachel Ali-Rodriguez | Psychology

One third of people diagnosed with epilepsy live with uncontrolled seizures because available treatments are ineffective. Seizures can be particularly devastating in early development due to long lasting neuropathological changes that result. Seizures result when neuronal activity becomes disturbed and neurons fire excessively or in unregulated patterns. A key site in the control of neuronal activity patterns is the axon initial segment (AIS), a highly organized cellular compartment whose local density of proteins and morphology in part determine the firing of neurons. We developed a mouse model of developmental seizures (Gabra2-1) by mutating a key receptor subunit enriched at the AIS, known as the $\alpha 2$ subunit. In addition to a loss of $\alpha 2$ at the AIS, we have found that the Gabra2-1 mutation alters the expression of other key AIS proteins including Ankyrin-G and βIV spectrin. We have also found that the Gabra2-1 mutation causes a change in the morphology of the AIS, resulting in shorter and highly disorganized AIS segments compared to wildtype controls. In particular, our attention was captured a substantial increase in the curviness of the AIS of Gabra2-1 mutated mice. These changes are evident early in development around the time that seizures emerge in the Gabra2-1 mouse model. Understanding the functional implications of AIS morphology and organization may provide new insight needed to develop therapies to control neuronal signaling. New treatments are needed to improve the quality of life of people who suffer with uncontrollable seizures.

Steady State Neural Responses to the Beat of the Music

Karli Nave, Erin Hannon, Joel S. Snyder | Psychology

Synchronous movement to music and other rhythmic stimuli is effortless, yet relatively little is understood about the mechanisms underlying this ability. While top-down processes presumably influence listener perception of musical beat (periodic pulse), it has been difficult to disentangle stimulus-driven from listener-driven processes. We used electroencephalography (EEG) to investigate whether steady state-evoked potentials (SSEPs, the electrocortical activity from a population of neurons resonating at the frequency of a periodic stimulus) reflect beat perception when the physical information in the stimulus is ambiguous and supports two possible beat patterns. Participants listened to a musical excerpt that strongly supported a particular beat pattern (context phase), followed by an ambiguous rhythm consistent with either beat pattern (ambiguous phase). During the final probe phase, listeners indicated whether a superimposed drum matched the beat of the ambiguous rhythm. Accurate performance required that participants perceive the beat in the musical excerpt and also maintain that percept throughout the ambiguous rhythm, despite having no surface evidence to reinforce that perception exclusively. Participants perceived probes that matched the beat of the context as better fitting the ambiguous rhythm, compared to probes that did not match the context. SSEPs during the ambiguous phase had higher amplitudes at frequencies corresponding to the beat of the preceding context. Finally, trial-by-trial analyses revealed that the amplitude of the beat-related SSEPs was predictive of whether or not subjects correctly perceived the beat. These findings support the idea that SSEPs reflect perception of musical rhythm and not just stimulus encoding of temporal features.

The anterior cingulate cortex mediates hippocampal contextual recall of consolidated memories

Ryan Wirt | Psychology

Decoding the neural circuits underlying memory storage and recall is vital. After learned, recall of contextual information is dependent on the hippocampus (HC), but as those memories become more remote, recall becomes independent of the HC. Multiple lines of research have shown that the anterior cingulate cortex (ACC) is involved with contextual information processing and remote recall of contextual memories. If this is the case, then these changes should cause shifts in neuronal ensemble and network oscillatory activity between the ACC and HC. To assess this, we recorded single units and local field potentials from the ACC and CA1 while animals were exposed and then re-exposed to a series of unique environments at differing time delays (1-14 days). Behavioral data revealed subjects quickly became familiar with the environments, with discernable changes to exploratory activity occurring as early as the second exposure. During remote recall ACC-CA1 theta coherence increased, with ACC theta leading area CA1. Theta band communication from the ACC also regulated CA1 unit spike timing, gamma oscillations, along with ensemble and single neuron information coding in CA1. In fact, for CA1 ensembles the degree of ACC theta entrainment was predictive of how strongly that population differentiated one context from another. Over the course of consolidation, the strength and prevalence of ACC theta modulation grew, leading to richer environmental context representations in CA1. Thus, we have discovered a novel electrophysiological marker of consolidated memory recall and these results will force a reconsideration of how long-term memory readout transpires.

DREADD Activation of Cortical Astrocytes Affects Motor Coordination

Kendra McGlothen | Psychology

Neuromodulation is a critical feature of the brain that regulates neurotransmission, neuronal circuitry, and behavior. Astrocytes, a major population of glial cells in the brain, have been implicated in playing a role in neuronal modulation. The bidirectional interaction between neurons and glial cells, such as astrocytes are vital for signaling, energy metabolism, and cellular homeostasis. Disturbances of these neuron-astrocyte interactions are likely to play an important role in [neurologic disorders](#) that impact motor capabilities. The basic understanding of locomotor activity has yet to explain the pathogenic mechanisms that impact the molecular and functional cortical network involved in motor behavior. Further exploration of varied cell types, such as astrocytes and the bidirectional interaction between them and neurons could potentially provide a comprehensive explanation of the major cells involved in creating and modulating motor movement. In this study the role of astrocytic signaling in the cortical circuit is explored utilizing chemo-genetic techniques that examine the electrophysiological, biochemical, and behavioral outputs of cortical astrocytes. Astrocytes in the motor cortex of mice were genetically engineered to express designer receptors that were exclusively activated by designer drug clozapine-n-oxide to better understand the cortical links between the molecular and functional levels of motor behavior. We found the DREADD activation of hM3Dq receptors of cortical astrocytes affected both motor circuitry and motor behavior in multiple behavioral assays that require the coordination and sequencing of motor movement. These findings suggest the major impact astrocytic signaling has on the neuron-astrocyte interactions necessary to produce coordinated motor movement.

GABA receptor signaling modulates development of alcohol use disorder

Jeffrey Barker, Reggie Anderson, Dustin J. Hines, Rochelle M. Hines | Psychology

Alcohol use disorder (AUD) is a debilitating condition marked by the excessive consumption of alcohol and an inability to stop consumption despite negative consequences. The development of AUD has been linked to dopamine signaling in the nucleus accumbens (NAc), but the intersecting roles of other neurotransmitter systems are less clear. Genome-wide association studies in families with AUD have implicated single-nucleotide polymorphisms in the *GABRA2* gene, which encodes the $\alpha 2$ subunit of GABA_A receptors. GABAergic neurotransmission regulates the activity of other cell types by reducing their firing probability. We have found that the $\alpha 2$ subunit is enriched in the NAc, and expression in NAc increases further with voluntary exposure to alcohol. Through examination of the subcellular localization of $\alpha 2$ expression in the NAc we have found that it is enriched on cells with high expression of the dopamine D1 receptor, known to be important for reward signaling. We are currently investigating the presynaptic interneuron type that may be releasing GABA onto these cells. We have also found that there is less voluntary consumption of alcohol and a reduction in the reinforcing effects of alcohol in a mouse model with altered $\alpha 2$ subunit localization. We are currently investigating the changes in subcellular localization of $\alpha 2$ in the NAc in this mouse model, and also how the subcellular localization may change in response to voluntary alcohol exposure. Together these results will provide new information about GABAergic signaling in the reward circuitry, and how GABAergic signaling may be involved in the development of AUD.

The modulation of currents in ECT regulates microgliosis and decreased mucoelglial branch order

Elaine Aquino | Psychology

Any disturbance to the central nervous system activates a series of morphological and functional changes to microglia, collectively known as reactive microgliosis. Reactive microgliosis is implicated in the symptomology and treatment of many neuropsychiatric disorders such as Major Depressive Disorder (MDD). MDD is a detrimental neuropsychiatric disorder that is lethal when not properly treated. Electroconvulsive therapy is one of the most effective treatments for MDD, however, its typically not used as a first-hand treatment. has a potential to cause damage to the CNS due to the electroconvulsive shock itself. Weak stimulation paradigms with low amperage have low potential for damage but also reduced therapeutic potential. There is a need for an optimal stimulation paradigm that has a high therapeutic potential but also minimizes the potential for damage. This paradigm is possible but a better understanding of the mechanisms behind ECT is necessary. In addition to helping optimize stimulation parameters, examination of how ECT affects microglia may also provide insight into the therapeutic mechanism behind ECT. To determine the effects of ECT on microglia, transcranial ECT was administered at different amperages, followed by an immunohistochemical analysis of microglia and their structure. Results show that different amperages cause a differential extent of microglia cell activation and increased amperage causes a decrease in microglia branch order. Developing a better understanding of the mechanism behind ECT and how it affects glia cells will lead to the production of an optimal stimulation paradigm, and further refinement of the procedure to optimize beneficial aspects of microgliosis.

**Social Science Podium Session B –
Room 209**



PRESENTATIONS:

8:45 – 9:00 AM	Linsey Belisle, Criminal Justice
9:00 – 9:15 AM	Stacey Clouse, Criminal Justice
9:15 – 9:30 AM	Nadia Eldemerdash, Political Science
9:30 – 9:45 AM	Shon Reed, Criminal Justice
9:45 – 10:00 AM	Vanessa Núñez, Sociology
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Jaclyn Keen, Criminal Justice
10:45 – 11:00 AM	Rylee Taylor, Public Policy and Leadership
11:00 – 11:15 AM	Matthew West, Criminal Justice
11:15 – 11:30 AM	Robin Mendoza, Public Policy and Leadership
11:30 – 11:45 AM	Nicholas MacMurray, Sociology
11:45 – 12:00 PM	Brooke Wolfe, Communication

From the Classroom to the “Big House”?Bringing Course Material to Life Through Experiential Learning?

Linsey Belisle | Criminal Justice

Criminal justice educators are continually trying to find ways to bring course work to life and exposure students to the realities of the criminal justice system. The current study utilized a content analysis of 33 student reflection papers to gain a better understanding surrounding how a jail tour, a formerly incarcerated guest speaker, and/or watching a documentary about life sentences influenced students’ perceptions of the correctional system. Three themes naturally emerged from the analysis: enhanced student learning, the cultivation of empathy, and benefits beyond the classroom. Additionally, the ethical concern with the jail tour as a teaching method was also derived from students’ reflections. The findings of this study add to the growing literature surrounding best practices in criminal justice teaching pedagogy.

Crime and Place Networks: A Las Vegas Study
Stacey Clouse | Criminal Justice

Persistently violent micro-locations that threaten the safety of residents and first responders represent a leading social problem in communities across the United States. Despite repeated police-driven initiatives that reduce crime in these locations, reductions are usually temporary, and crime tends to return to, or exceed, pre-intervention levels in historical hotspots. Small clusters of violent crime events have been subjected to extensive scientific study, leading to several theoretical advances in crime and place theories. Place Network Investigations (PNI), a new police investigative approach and city-coordinated strategy to eliminate violent micro-locations, is built upon the principles of crime place and place management theories. PNI is designed to identify and disrupt criminal and crime place networks within persistently violent locations. This presentation will describe the investigative strategies used to uncover hidden locations in the network, and describe an actual crime place network identified by an investigative team in Las Vegas, Nevada.

Electoral Systems in Authoritarian Regimes: An Anti-Democratization Tactic?

Nadia Eldemerdash | Political Science

Elections are conducted in authoritarian and semi-authoritarian countries around the world every year, yet in many of these countries, democratization remains elusive. An extensive literature exists on electoral systems that emphasizes their effect on voter choice and party coordination. Other studies demonstrate how governing parties manipulate those systems to strengthen their hold on government. Together, these works suggest that authoritarian regimes may be specifically selecting electoral systems that will weaken opposition parties and exaggerate their own party's share of seats and hold on power. I test this argument using electoral systems' design data and Freedom House rankings from countries that have held elections between 1980 and 2018 and find support for my hypothesis. I also find that monarchies in authoritarian countries are more likely to enact such electoral systems than non-monarchic regimes.

Overcompensating for Something: Masculine Overcompensation as an Influence on Criminal Behavior

Shon Reed, Dr. Melissa Rorie | Criminal Justice

Outside of Messerschmidt's work on "doing gender", most criminological theories ignore the influence of masculine identities on criminal behavior. Such neglect hinders our understanding of the potential for a man's perceptions of his gendered identity to impact his propensity to commit crime. Studies have shown that threats to men's masculinity may lead them to adopt more heteronormative ideologies (such as support for men's dominance over women, homophobic ideologies, and support of violence). These findings may be key in explaining why some areas of crime (e.g., intimate partner violence, white-collar crime, and hate crimes) are committed primarily by men. In this presentation we will describe a unique theoretical framework undergirding a series of research projects examining the impact of masculinity threat on criminal behavior. Preceding a discussion of the methodological framework for the studies, we will outline sources of masculine threat as well as their potential influences on behavior.

The Role of Faculty and Staff as Institutional Activists in Effecting Change for Undocu/DACAmented Students

Vanessa Núñez | Sociology

At Desert Rose University, undocu student activists are at the forefront of advocating for the institutionalization of resources for undocu/DACAmented students. Their activism and push for support has created some change on campus and is moving the campus to create a more inclusive community. In this paper, I explore the role that faculty and staff have played as institutional activists/actors at Desert Rose University and examine how and why they support undocumented student access to higher education. I approach this study from a feminist standpoint and employ an ethnographic method of inquiry in an effort to discover the motivators for faculty and staff to support undocu/DACAmented students and what strategies they utilize. This is currently an exploratory study that will be developed into a dissertation.

Are Women Safe in Prison? Measuring How Women use Prison Capital to Navigate Incarceration

Jaclyn Keen | Criminal Justice

In their groundbreaking analysis of women in prison, Owen, Wells, and Pollock (2017), expose the harsh reality of the continual search for safety that women experience as they navigate through their incarceration. For many women, seeking safety means assembling different forms of prison capital. Even though some women feel safer and more secure in prison by creating families, enrolling in programs and education courses, having hustles for income, or learning the “game,” there is still much work to be done for agencies to create the safest environments for the inmates and staff alike. Typical missions of prisons across the county emphasize “safe and humane environments” that prepare inmates for “successful reintegration into society.” While these missions are truly goals of correctional departments, often times we see overcrowding, minimal staff, slow/inadequate medical and mental health care, and a lack of women-centered services that create a contradiction to the mission. The current study seeks to assess perceptions of safety across two unique women’s prisons. The overarching goal of the project is to determine, through a comparative case study analysis model and a triangulation of data collection methods, how to improve safety within the institution. Implications for the study are vast, as the project will help agencies create an overall safer environment for the women inmates and the staff that fosters the healing, growth, and change necessary to break the vicious cycle of recidivism.

**Protecting Predators: Addressing the Culture of
Protecting Predatory Behavior in Collegiate Policy
Debate**

Rylee Taylor | Public Policy and Leadership

Hearing whispered thoughts and warnings about people to avoid at debate tournaments is a common practice for our activity, just as common as the consistency that those people seem to stay in debate with no perceived intervention. Very few people ever dare mention or discuss directly why those people should be avoided, most likely due to fear of retaliation or of having their concerns dismissed for the umpteenth time. To date, the CEDA process to ban a sexual predator from the community has only been used one time. It is time we, as educators, must ask if the survival of our activity, our students, and our friends is placed in jeopardy with the lax relationship the community seems to have regarding addressing and acknowledging sexual assault. While many panels, council of tournament director meetings, and conversations between coaches and debaters have occurred regarding "what to do about the predators," these conversations have failed to spark a call to action that is broad enough to encourage program-by-program changes. The culture of the community instead tolerates and attempts to conceal its rampant predatory nature in order to uphold a form of elitist virtue to retain donors and institutional support. This paper aims to identify the risk factors to lack of action regarding community safety, as well as pathways to address these risk factors on the individual, program, and community level.

Death Qualification on Appeal

Matthew West | Criminal Justice

A unique aspect of capital jury selection is “death qualification.” This process involves questioning prospective jurors about their attitudes toward the death penalty and the extent to which those attitudes might interfere with jurors’ ability to follow the law and fulfill their duty. Past research on death qualification suggests the process may inconsistently exclude jurors, produce an unrepresentative jury, and increase punitiveness, ultimately resulting in a defendant’s increased risk of receiving a death sentence. Issues such as these are sometimes raised by the defense on appeal. Using modern death sentence cases in Nevada, the purpose of the current paper was to examine the extent to which death qualification issues are cited as grounds for appeal, and how judges evaluate and respond to these arguments. Results show that death qualification issues are very rarely cited as grounds for a death sentence appeal, and when they are, judges tend to find that they lack merit. There are three primary barriers to appeals based on death qualification issues: 1) Trial judges have discretion in making death qualification determinations, 2) judges minimize attitudinal bases for qualification, and 3) difficulty in demonstrating prejudice. Legal implications and directions for future research will be discussed.

Examining the Impact of Fidelity and Staff Turnover on Program Implementation and Outcomes in a Bystander Focused Violence Prevention Program

Robin Mendoza | Public Policy and Leadership

The evaluation of the impact of programs designed to prevent or reduce interpersonal violence often rests on the analysis of individual change outcomes with much less analytic attention paid to contextual or process factors related to the program's outcomes. However, successful implementation of violence prevention programs depends on the organization's capacity to engage well-trained staff to deliver programming with fidelity. This research examines the impact of institutional factors on turnover of staff in sexual violence prevention and intervention. Using a mixed-methods study, we explored the role that turnover had on fidelity during implementation of a violence prevention program which ultimately impacted the outcome of the program, decreasing perpetration of dating and sexual violence. We then explore the use of organizational strategies to mitigate the impact of turnover on program outcomes both by addressing the conditions that promoted educator turnover and also by minimizing the program disruption when turnover occurred. The data for this research is being collected via a national survey of rape crisis centers in the United States. The study examines issues related to institutional support, compensation, role complexity, and advancement opportunities and their relationship to rate of turnover for direct service providers in the field.

Constructing Change: Death System Politics and End-of-Life Activism

Nicholas MacMurray | Sociology

The Life Course Perspective draws attention to matters of structure and agency over time. As individuals move through their lives, they encounter the structural environments of their times, which informs their social development and life course trajectories. This is also true of the end of life. Today, formerly taken-for-granted death systems are being critiqued and challenged by a variety of new ideas and practices. To investigate this shifting cultural milieu, I qualitatively examine efforts by "death reform advocates" to modify end-of-life structural pathways. I find complex and well-organized projects engaging in death systems politics, or the political struggle to define which social structures should preside at the end of life. My findings indicate that the end of life is a political terrain in which various interests vie for cultural authorship and representation. As all members of society share a vested interest in the structural pathways and systems which define the social landscape of death, the outcomes of these political processes have important implications for individual life course trajectories, as well as US society as a whole.

Dialectical Tensions in Women's Dating Experiences

Brooke Wolfe | Communication

Dating to find a lifelong partner is a priority for many young adults, as the process exists on a socially constructed timeline (Baxter & Braithwaite, 2002). Although, like many other experiences in the public sphere, single women are adversely constrained by societal expectations in regards to their sexuality and use of agency (Dunn & Vik, 2014). This study explores women's dating behaviors in cooperation with societal messages that are navigated as a necessary step in finding a romantic partner. With the framework of Relational Dialectics Theory, I examine how participants learn the rules of dating, in what ways dating behavior is impacted by the recognition (implicit or explicit) of dialectical tensions present in dating scripts, and the decisions women make in disclosing their dating experiences with members of their social network. By examining women's accounts of how they navigate dating and how they communicate about it, I aim to illuminate what tensions women experience when dating and how they cope with those tensions. Using a contrapuntal analysis, interview and survey data will be coded to highlight dialectical tensions women experience when dating to explore the implications of such messaging.

**Humanities and Fine Arts Podium
Session – Room 211**



PRESENTATIONS:

8:45 – 9:00 AM	Dylan Fisher, English
9:00 – 9:15 AM	Roy Johnson, English
9:15 – 9:30 AM	Laurence Reese, Art
9:30 – 9:45 AM	Gary Lindeburg, English
9:45 – 10:00 AM	Leisa Loan, English
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Claire Morgan, English
10:45 – 11:00 AM	Daynee Rosales, English
11:00 – 11:15 AM	Erin Turner, English
11:15 – 11:30 AM	Chelsea Adams, English
11:30 – 11:45 AM	Luke Coulter, English
11:45 – 12:00 PM	Spencer Darr, English

The Love Letters of Franz and Elisabeth: Holocaust Literature in the 21st Century

Dylan Fisher | English

In July 2019, I traveled to Amsterdam to research and translate the archives of Franz Jakubowski and Elisabeth Spanjer-Fisher (my grandparents) at the International Institute of Social History. Franz and Elisabeth were both politically active (as Trotsky acolytes) in the 1930s in Poland, Germany, and the Netherlands. As Jewish Trotskyites, they were persecuted in—and survived—the Holocaust. In studying their archives, I’ve focused (as a creative writer) on two primary questions: (1) Where do I come from? and (2) How should the Holocaust be remembered—in public and private spheres—after the survivor generation is gone? Franz and Elisabeth spent much of their relationship on different continents, Franz in New York, Elisabeth in Amsterdam, and, as a result, their collected correspondence (1958 to 1970) is a narrative of their personal development (on parenthood, art, nature, politics) as much as it is a story of their romantic lives. To read these letters, thus, is to complicate the literature of witness and testimony with the quotidian and the explicitly personal, to pull at a thread from my grandparents’ generation to ours.

A Fresh Look at an Old Controversy through Correspondence: Charles De Koninck, Yves Simon, and the Defense of the Common Good

Roy Johnson | English

This work is a French to English translation project of some correspondence between the philosophers Charles De Koninck and Yves Simon regarding De Koninck’s book *On the Primacy of the Common Good against the Personalists*. The greater part of the correspondence is taken from De Koninck and Simon in the decade surrounding 1943, the year De Koninck published his book. Several of De Koninck’s other correspondents such as Eugene Babin, Maurice Dionne, Henri Guindon, as well as some others, have been included in the translation project.

De Koninck’s book generated a small and vibrant controversy. *The Common Good* is primarily a critique of Marxist personalism from the perspective of Aristotelian-Thomism. However, to some philosophical circles the book appeared to attack the views of personalism held by the French philosopher Jacques Maritain, who had been Yves Simon’s teacher at the *Institut Catholique de Paris*. While Yves Simon did not in the final analysis, perhaps, agree with all of De Koninck’s conclusions about the personalists, Simon did agree that De Koninck’s treatment of personalism did not include an attack upon Maritain. Finally, the correspondence reflects also an intimate and burgeoning friendship between these two North American philosophers.

Partial Arts Dojo: Queer Factory Gear
Laurence Reese | Art

Partial Arts Dojo uses performance art, video, and sculpture to explore the physical and social space that the trans and disabled body occupies within labor. The work draws on my immediate background as a blue collar laborer in the Bible Belt. The daily tasks performed in a factory are monotonous, even meditative, as they require the attention of the body, yet not the attention of the mind as it relates to identity. As the tasks are practiced over long periods of time, the identity of self outside of the moment is washed away. The self is both ever-present, and absent. For a queer, disabled person, the hyper attentiveness on the body can feel intense and stressful. Performances are inspired by the repetitive actions from the factory world. Sculptures involve handmade wood pallets, gear that both restricts and liberates the trans and disabled body, and objects that imitate factory equipment. I am inspired by scholarly research into the psychological experience around transgender identity, and the philosophies around what constitutes work, and what constitutes art. This work is significant in its research into the histories and existences of queer and gender diverse laborers, as well as the examination of rights and needs for disabled and trans workers, not just by making a list of demands, but by facilitating the demands and making accommodations via practical gear.

Early Modern Atrocity in Yamanote Jijosha's *Titus Andronicus*
Gary Lindeburg | English

Atrocity is used on stage to convey many things through the usage of violence, and *Titus Andronicus* uses an extreme sort of brutality as an integral part of its dramaturgy. The bodily harm portrayed touches on numerous elements of human relationships and how they become part of larger cultural machinations in the Roman court. In Yamanote Jijosha's production, the violence is maintained but becomes an encoded examination of the clash not between Roman and Goth, but between modern and traditional Japanese aesthetics.

The clash is visually represented in the dress of the various characters using eastern and western styles as part of the differentiation between the two aspects of Japanese identity in question. The Romans are all in traditional Japanese kimono and the Goths are in western suits and dresses, creating a clear shorthand for the tension examined. The connection goes deeper, as blood and bodily fluids are represented by artifacts of the character's cultural leanings.

The stage looks like a black-box take on a modern Japanese apartment. 3 tatami mats form the central areas of action split into a triptych across the stage with modern appliances in the shadows. Reinforcing the modern/traditional tension is the addition of Titus' wife as the narrator, an elderly woman that remains on stage throughout. Forgotten and ignored, she wears kimono and is the only one to interact with the various appliances, ultimately being the answer to the conflict that no one heeds.

The ultimate point I am going to make is that the violence and atrocity of *Titus Andronicus* is used as a commentary on Japan's cultural identity struggle between traditional and modern, as the dueling urge to keep up with global trends and styles comes against a desire to honor and maintain tradition.

Antonia Pozzi and Sylvia Plath: Impacts of Suicide and Censorship in the Canon of Women's Poetry
Leisa Loan | English

Through on-site research in Pasturo, Italy I will be developing a project surrounding the life and work of Italian poet Antonia Pozzi with particular focus on how her writing and experiences parallel those of American poet Sylvia Plath. In Pasturo I will be afforded the unique opportunity to pursue my research work at the museum and estate of Antonia Pozzi which houses archived materials and biographical information about the poet that is largely unobtainable in English or American libraries. After collecting information protected by the estate of this complex, vital, and yet often overlooked female poet, I aim to focus on the connections and relationships I have begun to uncover between Pozzi and Plath. My goals are to investigate how suicide as well as acts of censorship enacted on the work of female poets impacts their reception and positionality in their respective cultures, time periods, and in poetic discourse overall.

The Other Truth: Hagiography and Epistolary Translation of the Feminine in Sicily
Claire Morgan | English

My research focuses on contextualizing and rewriting the hagiographies of martyred women saints with the goal of examining the role of feminine sacrifice and purity within patriarchal systems (Christian and otherwise), as well as the well-documented alignment of the feminine with selflessness and divinity. I am particularly interested in the violent and fatal elements of these respective hagiographies in the context of the ongoing global epidemic of violence against women. The three martyrs I fixate upon are Saint Cecilia (200-230 AD, Catania), Saint Lucy (283-384 AD, Syracuse), and Saint Agatha (231-251 AD, Palermo/Catania). By visiting their respective places of birth, life, death, and patronage, my aim was to gather a fuller understanding of their lives and sufferings within their most immediate context(s). Additionally, a significant portion of my time spent in Sicily was focused on the translation of a volume of previously untranslated letters by Alda Merini, *Lettere al dottor G* (2008). As much of the lives and works of Italian women poets have slipped through the cracks of the canon, this recent discovery of Alda Merini's letters to her first psychiatric therapist, Dr. Enzo Gabrici, written during her many decades in a mental asylum, hardly made a ripple in the literary world. As Merini takes her place in the epistolary tradition of poets, she reveals in letters and poems the haunting reality of psychiatric treatment and womanhood in 20th century Italy.

**Mujeres Creando: Bolivian Women and the Fight for
21st Century Immigrant Identity**

Daynee Rosales | English

I spent the summer of 2019 in Spain doing research to better inform my MFA thesis: a fictional novel set fifteen years after the Bolivian Water Wars which discusses themes of Hispanic and indigenous languages and cultures and their role in colonization, diaspora, national identity, art, feminism, and intergenerational trauma. Many Bolivians immigrated to Spain and the U.S. after 2000, especially women, alone. I was interested in learning the similarities and differences between the two immigrant experiences, those in Spain and the U.S., with a focus on how the immigrant experience has changed in the 21st century compared to ten or twenty years ago.

While this research was intended for a creative project I still chose to approach it with clear methodology. I spent weeks digging through old family archives of books, notes, and photographs and looked into social media's role of connecting immigrants to their families back home and helping them find their new ones in Spain. I connected with scholars at the Madrid Book Festival and recorded interviews with different members of the Bolivian immigrant community in Madrid. The body of research resulted in a collection of narratives largely about working class women making art as a coping mechanism for loneliness and the loss of homeland or the children they support back home, but it also tells the story of the unique ways they found a way to make their place in the world.

Women in Las Vegas Film and Entertainment

Erin Turner | English

This paper explores the film industry in Las Vegas, Nevada in the United States. For a small town, Las Vegas has a surprisingly strong film industry. Many of the filmmakers in Las Vegas come from the University of Nevada Las Vegas's film school and the rest are creators from around the world who usually come to Vegas to produce shows on the strip. The original research includes in-depth interviews with four women in four different professional sub-fields of film. Two of the women requested that their real names be omitted from this essay due to fear of backlash. There are no real regulations in the film business, especially for lesser known names and smaller jobs. Let's face it, smaller jobs in film make up the majority of the industry making this essay a microcosm of the global film industry. Written in spring of 2017, it's also a precursor to the #MeToo movement and further proof that sexism has been an issue for too long in this industry.

Humanities and Fine Arts Podium Session – Room 211
11:15 AM – 11:30 AM

Combating Imperialism: Contextualizing J.J. Thomas and Froudacity

Chelsea Adams | English

Combining facts with just the right amount of condescension and disrespect, it may be said that with the writing of his political polemic *Froudacity: West Indian Fables Explained*, nineteenth-century linguist J.J. Thomas dismantles the popular colonial-era travel narrative stereotype of the childish black population in need of white saviors. A rebuttal to J.A. Froude's Caribbean travel narrative, Thomas focused on proving not only that Froude's work is rife with racism and inaccuracy, but also that race should not be the basis for organizing power or government of a society. Celebrated in its day, the work is now out of print and has been largely lost in the discussion of nineteenth century Caribbean literature. This paper serves as a recovery project to discuss what people have to say about their own cultures, allowing for a more nuanced understanding of the complexity of race relations in the Caribbean in the nineteenth century.

Fine Arts Podium Session – Room 211
11:30 AM – 11:45 AM

Toward Using Assessment to Create Socially Just Writing Centers

Luke Coulter | English

Writing center assessment has long been an area of contention and compromise. Neal Lerner often references the necessity of creating assessment that protects writing centers from outside influence and budget cuts. Ellen Schendel, William Macauley, and many others have researched different strategies for designing assessment that protects and grows writing centers. However, college demographics are changing fast, and these new students call into question many of the systems that we have in place to help them. Asao Inoue correctly points out that anti-racist writing ecologies need to be constructed to make certain these writers aren't left behind. Writing centers don't have the luxury of ignoring these changes, especially because tutors and consultants are vital to mitigating the distress of these shifts on an increasingly underprivileged population. I plan to illustrate how writing centers can use assessments focused on cultural and socially conscious guidelines to customize their offerings in order to better help close performance gaps. I'll examine how current writing center assumptions fail needy students. I'll also talk about possible methods for building new assessment tools that fix common blind spots in contemporary tutoring strategies while keeping in line with basic tutoring philosophies. Writing center training, mission statements, and awareness building strategies should all be dependent on the people that are served, and an awareness of who those people are is therefore vital. Paying more attention to individually diverse populations in a socially just environment can create writing centers that better conform to the needs of their students.

**Paying Attention: The Design Similarities Between
Social Media Platforms and Casinos**

Spencer Darr | English

In this research project which will become a part of the thesis for my Creative Writing (Literary Nonfiction) MFA, I primarily examined the similarities and/or conflicts between social media platforms, specifically Facebook, and the design of casino environments, specifically the Luxor, when it comes to maintaining users/patrons attention. A secondary concern for this project is to what extent is it realistic to determine a non-fiction story's form/structure when the story is still ongoing, when the research and writing of it is still in process. As part of this project, I stayed in the Luxor Hotel & Casino for 4 days/nights performing participant observation. In conclusion, both the design of a casino and social media platforms are very similar, specifically how both are designed with the intention of keeping users "time on device" and patrons time inside the casino at a maximum. Also, the intended narrative design and scope of this story changed as a result of this project, so, while it is possible to have a predetermined structure for a literary nonfiction thesis, in all probability the structure will change through the course of writing the thesis.

**Education Podium Session – Room
208B**



PRESENTATIONS:

8:45 – 9:00 AM	Monica Hernández- Johnson, Educational Psychology and Higher Education
9:00 – 9:15 AM	Marcela Rodrigues-Campo, Teaching and Learning
9:15 – 9:30 AM	Chengcheng Li, Teaching and Learning
9:30 – 9:45 AM	Ana Paula Loures dos Santos, Educational Psychology and Higher Education
9:45 – 10:00 AM	Andromeda Hightower, Teaching and Learning
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Alfred Acquah, Teaching and Learning
10:45 – 11:00 AM	Ariana Garcia, Educational Psychology and Higher Education
11:00 – 11:15 AM	Nicole Thomas, Teaching and Learning
11:15 – 11:30 AM	Sarah Wells, Educational Psychology and Higher Education
11:30 – 11:45 AM	Rosnidar Arshad, Teaching and Learning
11:45 – 12:00 PM	William Woods, Educational Psychology and Higher Education

Critical Mixed Methods Research: QuantCrit, Cultural Intuition, and Counterstories

Monica Hernández- Johnson | Educational Psychology and Higher Education

This conceptual work is an attempt to provide a complementary framework to mixed methods research (MMR) to promote critical inquiry. The framework we discuss here is heavily informed by the scholarship of scholars of color and critical race theories. This is a critical approach for MMR in general, not one particular MMR design and/or to be inserted to fulfill a diversity quota. Critical Mixed Methodology requires a paradigm shift that also critically reflects on the role of the researcher. In addition, Critical Mixed Methodology is not a linear process but an iterative and interconnected one driven by the needs of the study to bring forth a more accurate portrayal and fuller picture, especially when conducting research with underrepresented and marginalized groups.

Burnt Offerings: A Testimonio of Family Separation

Marcela Rodrigues-Campo | Teaching and Learning

In this article I share my testimonio of immigration and separation to give voice to the experiences of immigrant children currently being affected by mass deportations and detentions. By using a Chicana Latina feminist epistemological framework, I am able to honor my voice by pulling from nontraditional ways of knowing and modes of writing that convey the deeply complex impacts of family separation on youth. I argue that current immigration policies are willfully sacrificing the innocence of migrant children to serve a xenophobic and White supremacist agenda. Ultimately, the voices of migrant children are missing from current public dialogue on immigration, either by force and/ or fear, and are necessary in order to respond to the crisis happening at the border.

Teachers' self-efficacy and technology integration in K-12 education: A meta-analysis

Chengcheng Li, Yichen Yang, Qing Wu, Shaoan Zhang, Bowen Liu | Teaching and Learning

This meta-analysis examined studies on the relationship between teachers' self-efficacy and technology integration in K-12 education. A total of 14 studies in this meta-analysis with 3272 participants including 532 pre-service teachers and 2740 in-service teachers from Finland, Taiwan, U.S., Turkey, and Korea. Findings indicated that teachers' self-efficacy had a positive relationship with their technology integration in K-12 education ($r = .32$); however, the relationship between teachers' self-efficacy and their technology integration did not differ significantly in terms of population (i.e., pre-service teachers vs. in-service teachers), region (i.e., U.S. versus Finland, Taiwan, Turkey, and Korea), and sample size ($n = 300$). Implications for both pre-service and in-service teachers' professional development with self-efficacy and technology integration were provided.

Self-Efficacy and Interest as Synergistic Mechanisms of Personal Agency: A Social Cognitive View

Ana Paula Loures dos Santos | Educational Psychology and Higher Education

The research “Self-Efficacy and Interest as Synergistic Mechanisms of Personal Agency: A Social Cognitive View” aimed to examine an interactive effects model of the role of science self-efficacy beliefs and interest in achievement. Furthermore, given the centrality of gender to motivational beliefs, achievement, and their relations, we examined the cross-gender generalizability of the model. Analyses focused on a large, representative sample of US adolescents using a latent moderated structural equations approach. Our findings showed that self-efficacy and interest synergistically interact, such that the positive effect of self-efficacy is enhanced when interest is also high. This effect was found to generalize over gender, but future work is required to examine the cross-domain and cross-cultural generalizability of this effect.

Spatial-scientific Snapshots of Middle Level Students’ Lunar Understanding

Andromeda Hightower | Teaching and Learning

In the wake of recent educational reforms and a higher focus on standardized testing, there is a growing concern in the United States that students are not receive a quality educational experience, particularly in the area of complex skills, such as critical thinking and problem solving. However, these two skill sets are not the only complex skills that students need to be successful for the 21st century. Science classes require several different sophisticated skills sets in order for students to grasp and apply STEM (science, technology, engineering, and mathematic) concepts, and one of these skills sets is spatial reasoning. In particular, being able to assess and predict the motion of celestial bodies is a difficult skill for middle school students to grasp, and as such there is a need to develop professional development and curriculum tools to help teachers teach and students learn the process of applying spatial reasoning to make prediction about the motion of these bodies. This study contributes to this gap by examining the lunar-related spatial-scientific understandings of students from Kentucky and Nevada through a mixed-methods approach. Quantitative data consists of students completing a content survey as well as two spatial assessments. Qualitative data involves interviews with students from Kentucky and Nevada. Tentative findings have revealed that Kentucky and Nevada students shared similar misconceptions to explain phases.

Valuing Cultural Wealth: Refugees and Immigrants in the U.S. classroom

Alfred Acquah | Teaching and Learning

The study explores the cultural wealth of immigrants and refugees relative to the U.S. classroom. It entails relevant information on immigrants and refugees as well as their contributions to the classroom. It challenges racist acts such as deficit thinking and microaggressions faced by these minorities in education. This, in turn, addresses inequities in the classroom such as when immigrant and refugee students are perceived as “without the normative cultural knowledge and skills” needed to succeed (Yosso, 2015, p. 75). The study focuses on (1) the exploration of the educational experiences of immigrants and refugees, (2) understanding the cultural wealth they possess, and (3) understanding the significance of their cultural wealth in the U.S. classroom.

The study was conducted through a review of related literature. Articles, mostly peer-reviewed, on (1) the cultural wealth, (2) the experiences of immigrant and refugee students, and (3) the significance of cultural wealth were searched and annotated. Searched articles for the study range from 1970 to 2018. The results showed that the cultural wealth of immigrant and refugee students when acknowledging and used brings about culturally responsive teaching, academic success, and confidence in sharing their narratives with teachers and other students.

The immigrant and refugee population in the United States has increased with one child in every four having at least one parent who is an immigrant. The cultural wealth they bring make them contributors and beneficiaries of the U.S classroom. Their funds of knowledge, if realized by educators, aid their academic functionality.

"I am out here alone practically": How identity shapes how Latinas in STEM establish mentoring relationships

Ariana Garcia | Educational Psychology and Higher Education

This study explores how eight Latinas pursuing undergraduate STEM degrees develop mentoring relationships in college. Specifically, this study examines how a student's identity shapes whom they engage in mentoring relationships with and how these relationships are constructed. Findings from this qualitative study reveal that Latinas use their involvement outside of the classroom to connect with their identities. Latinas found comfort in participating in identity-based organizations within and outside of STEM and utilized these involvements to nurture their identities. Additionally, we find that Latinas engaged in active compartmentalization of different aspects of their identities as they formed support networks while in college. This strategy allowed Latinas to seek and find mentorship that complemented one of their many identities.

Space, Scale, And Scope: Enhancing Understanding And Decreasing Misconceptions In Stem Education

Nicole Thomas, Tina Vo | Teaching and Learning

This project aims to identify scientific misconceptions surrounding space, scale, and scope, and the introduction of interventions to potentially address those misconceptions. This study was conducted within a population of preservice elementary science teachers at a large southwestern university. Our objective was to create research-based activities in order to address common misconceptions found in physics, astronomy, and geology. This quasi-experimental study included surveys, research-based classroom interventions, and data analysis in order to assess and address common misconceptions. Our preliminary data demonstrate that this population of preservice teachers harbored several misconceptions regarding both elementary geology and astronomy concepts. These misconceptions ranged from misunderstanding the lunar cycle as well as the size and distance of the moon. Additionally, many students struggled with understanding the structure of our solar system and how quickly light travels. With regard to the geology survey, some students reported misconceptions regarding weathering processes and conceptualizing the deep time scale. The three research-based interventions were created in accordance with addressing the common misconceptions present in this population. Our preliminary data suggest that the students have responded well to these interventions. By addressing these potential lapses in science education, we may better prepare science educators for the workforce and increase their confidence in delivering these lessons to their students, thus engaging and creating a more educated populace.

Evaluating the utility of a mindfulness in the elementary classroom

Sarah Wells | Educational Psychology and Higher Education

This purpose of this study was to focus theory towards determining (1) whether mindfulness training has practical application for universal populations in an elementary educational setting and (2) whether results of observed emotional and cognitive benefits from mindfulness training would lead to measureable improvements in academic performance at the elementary level. The utility of mindfulness training in the classroom, as a moderating agent against ego-depletion, was explored in relation to the inherent implications for student academic success. Academic achievement and perceptions of third, fourth, and, fifth graders participating in a 3-week mindfulness training program were examined across variables of executive control, emotional regulation, and math skills mastery. Mindfulness training produced observed emotional and cognitive benefits, including increased executive control and decreased negative affect, which translated to improved academic performance at the third grade elementary level. The study occurred in an active school environment and results were analyzed through a series of mixed model analyses of variance.

Critical validity in national and international learning assessments: A counter proposal to psychometric validity

Rosnidar Arshad | Teaching and Learning

Standardized test is currently the most recognized form of learning assessment at national and international levels. Educators and evaluators are required to ensure that standardized tests administered adhere to psychometric validity, the instrument used to measure the degree to which administered tests and the produced scores may be reliably used in making educational decisions. This paper analyzes the future relevance or usefulness of standardized tests at national and international levels and the feasibility of replacing those tests with equitable, culturally responsive, and environmentally conscious educational assessment methods by addressing the questions: 1) Is psychometric validity an effective evaluation tool to ensure test constructs do not contain culturally-bias western-centric elements? 2) Does psychometric validity take into account desirable values within the context of culturally and environmentally inter-connected world in predicting future performance? The Program for International Student Assessment (PISA) is referenced to highlight the inequity as well as contextual and cultural invalidity of standardized tests which are not taken into account in assessing learning among diverse students. Considering how culturally diverse most developed countries in the world will be due to globalization, a more equitable and culturally responsive form of validity is proposed, and this validity should be termed as critical validity, based on principles of cultural responsiveness (Hood, Hopson, & Kirkhart, 2015), within a social justice framework (Adams et al., 2018). This validity must be considered of paramount importance for learning assessments, especially within the current environment of intensified globalization and increasing diversity within countries.

Academic and Social Barriers for Students with Learning Disabilities Entering College

William Woods | Educational Psychology and Higher Education

In 2004, the federal government expanded the Individual with Disabilities Educational Act (IDEA) to help prepare those with disabilities for college and beyond (Hadley, 2011). Many of the students with learning disabilities took advantage of this new initiative and the rate of enrollment started to surge (Hadley, 2011). Once the students with learning disabilities got into college, many found out that they were not academically prepared to become successful students (Orr & Hamming, 2009).

Because of this, students with learning disabilities account for the largest population of students with a disability who will either fail or drop out of college.

When asked, many will say that they met barriers that hindered them from becoming a successful student.

Academic success for adolescents who attend college is a pressing issue in higher education. Those with learning disabilities who attend college are 3.5 times more likely to fail or drop out when compared to their peers who do not have a disability. The purpose of this proposal will be to offer a conceptual insight into this issue and to see what can be done to change the trends that exist.

Thirteen articles were read about this topic and central themes were found that related to the barriers faced by those with disabilities. The barriers that mentioned the most were reading comprehension, inability to follow lectures, and understanding the complex text that is seen in college materials.

**Social Sciences and Hospitality
Podium Session – Room 213**



PRESENTATIONS:

8:45 – 9:00 AM	Bridget Longoria, Sociology
9:00 – 9:15 AM	Huiying Zhang, Hospitality Administration
9:15 – 9:30 AM	Nasim Binesh, Hospitality Administration
9:30 – 9:45 AM	Brianna Heisler, Anthropology
9:45 – 10:00 AM	Jennifer Kimball, History
10:00 – 10:30 AM	Break
10:30 – 10:45 AM	Jeannette Hernandez, Sociology
10:45 – 11:00 AM	Varsha Suresh, Couple and Family Therapy
11:00 – 11:15 AM	Doris Morgan Rueda, History
11:15 – 11:30 AM	Wenjia Han, Hospitality Administration
11:30 – 11:45 AM	Johanna Andrews, Environmental and Occupational Health
11:45 – 12:00 PM	Shae Smith Cox, History

Negotiating Discourses: Organizational framing and identity work in social services

Bridget Longoria | Sociology

This research focuses on understanding the relationship amongst cultural discourses, organizational framing, and the identity of social service recipients. Specifically, I highlight interactions between social service providers (SSP's) and social service recipients (SSR's) to understand how cultural beliefs, organizational goals, and individuals' implicit and explicit anticipations of the situation come together in real time with real consequences. I conceptualize social service providers as institutions "composed of people who act, at times in concert and at times in conflict, with the immediate working context and within the larger environment" (Hallett and Ventresca 2006, 214). Actions in SSPs "occurs in a context of meaning that can be constraining as well as enabling" and is constituted by communication formats and framing rules that "serves to foster a negotiated order that modifies the impact of structural order on situations" (Altheide 1988). In my research, nonprofit social service provider offices are spaces where the negotiated order of deservingness is being concretized on a daily basis, through providers and clients' self-presentations, identity work, and negotiations to resolve inconsistencies within discourse frames. Ultimately, I am interested in how these negotiations influence both clients' abilities to access needed services and providers' efficiency in providing them.

Beyond the Resident-Tourist Relationship: A Conceptual Model of Value Co-Creation and Profit-Sharing

Huiying Zhang | Hospitality Administration

The interaction between tourists and residents is the essence of tourism, however, tourism development brings both positive and negative impacts on residents. The introduction of value co-creation concept provides an alternating way to this dilemma through expanding positive influence to gain residents' support. Research shows that only when residents perceive economic and social-cultural benefits can they co-create value and nurture favorable resident-tourist relationship. Previous research lacks a holistic approach toward the value co-creation process, which hinders the development of the resident-tourist relationship and fails to guide policy decisions. To address the identified research gap, the study aims to construct a sustainable multi-stakeholder model for value co-creation and profit-sharing.

This study attempts to develop a conceptual model of value co-creation and profit sharing for destinations. By examining the connections among *Stakeholder Theory*, *Collaboration Theory*, *Resource Theory*, and *Service-Dominant Logic Theory*, this theoretical paper furthers the value co-creation research and provides guidance to policymakers to support such innovation for long-term sustainability in destination development and resident-tourist relationship. The model is shown in *Figure 1*. On the top of relevant theories and studies, the *profit-sharing mechanism* works when economic gains generated in the destination are directly distributed among all stakeholders. Future research should test the model's effectiveness with empirical data. ***Detailed discussion and reference on theoretical and practical implications will be provided in the full paper.***

Robots/AI in luxury hotels: customer's perception and motivation

Nasim Binesh | Hospitality Administration

INTRODUCTION

Forecasts show by 2030, about 25% of routine tasks in hospitality will be conducted by robots. the prediction that AI will be rapidly adopted over the next 20 years, it is not surprising that it is one of the most prolific areas of academic research [8]. Despite the increasing attention, the number of empirical studies on the implementation of robots and AI in hospitality remains scarce. Thus, this study attempts to cover this gap by looking at the contributing factors to customer's perception of the relative importance of robots and AI in the hotel industry, and customer motivation in the process.

RESEARCH QUESTION(S)/HYPOTHESES

- 1) What is the relative importance of robots/AI practices in luxury hotel service delivery system? How do they vary by demographic and psychological factors?
- 2) How using robots/AI in luxury hotels impacts customer motivation?

LITERATURE REVIEW

In general, previous studies indicated that human appearance is more likely to induce positive perceptions and attitudes. Robots that are lifelike can deeply involve users emotionally, which, in turn, will influence their behavior [3] . Moreover, people typically form first impressions when encountering others and positive first impressions often lead to positive evaluation. Prior literature provides evidence that customer motivation, as well as their age and gender, have a significant impact on the way that users interact with technology [5][8].

METHODS

The project starts with pilot study of luxury hotel customer's perception of the relative importance of robots/AI service delivery in hotels. Furthermore, based on the findings of the pilot study, and literature a survey of hotel customer's experience/preferences on using robots/AI in hotels will be conducted. Customers rate the level of importance for each aspect of robotics and AI in hotel industry, and customer motivation in the process.

PRACTICAL IMPLICATIONS

- 1) A better understanding of customers' perception of the relative importance of robots/AI in hotel service delivery system
- 2) A venue for redesigning luxury hotels' service model based on insight from this study
- 3) Tailoring robot-delivered services in activities that face least resistance by the hotel customers
- 4) Differentiation of service compared to all human staffed hotels
- 5) Enhanced relationship with existing customers through enhanced customer experience

Paleoecological Analysis of East African Fossil Sites

Brianna Heisler | Anthropology

The sedimentary and fossil records of East Africa are relatively poor from 2.5 to 3.0 million years ago. At this time, the genus *Homo* evolved while the *Australopithecus* genus briefly persisted. The earliest *Homo* specimen identified is the LD 350-1 mandible from Ethiopia. Another set of fossil hominin teeth from Kenya, KNM-ER 5431, has been suggested as a potential conspecific to LD 350-1. To understand the selective pressures influencing the divergence of *Homo* and *Australopithecus* at this time, contextual research that characterizes regional paleoecology is important. This project therefore seeks to better understand the paleoenvironment of the KNM-ER 5431 site in comparison to other fossil sites in East Africa. By comparing ecologically-informative characteristics of faunal fossils to those observable in animals from modern ecological sites, characteristics of the past environment may be inferred. The results of the initial analysis indicate 1) the environment became more arid over time during the Plio-Pleistocene 2) the KNM-ER 5431 site may have experienced decreased rainfall in spite of more abundant sources of standing water 3) fossil localities in Kenya, and especially the KNM-ER 5431 site, were climatically dissimilar from those in Ethiopia, such as the site of LD 350-1. If KNM-ER 5431 and LD 350-1 represent the same species, then our earliest ancestors were adaptable to environmental variability. If KNM-ER 5431 was instead an *Australopith*, then the wetter environment in which it lived may have influenced its retention of arboreal characteristics while *Homo* committed to a fully bipedal terrestrial mode of life.

A Feminine Touch of Cultural Imperialism: Women and the British Missionary Enterprise in the late Qing Dynasty

Jennifer Kimball | History

Utilizing missionary periodicals, correspondence, treatises, other primary texts and supplemental secondary sources, I explore the role that women played in the British Missionary enterprise in their operation of schools for girls in the Late Qing Dynasty between the First and Second Opium War. I study these women through the lenses of faith, education, identity and agency and how their operation of these schools represented methods of cultural imperialism. These women were both bound and empowered by Christian and secular ideals of nineteenth century society. They utilized transnational networks and engaged in discourses, whether by soliciting funds or sharing their experiences and methods, in such a way that made them evangelical agents of empire. Through this discourse they perpetuated the justification of an evangelical civilizing mission aimed at Chinese women and girls. Their successors, English and Chinese, would follow their legacy in different ways as the enterprise became more diverse after the Second Opium War. This research is important because even though there have been important developments in scholarship of British women missionaries in this region further into the Victorian era, the women in that first generation of missionary schools are still underrepresented in scholarship. There is no comprehensive body of research that covers Mary Ann Aldersey and her contemporaries' foundation of a gendered Anglo-Chinese evangelical and educational legacy. This research aims to correct this. While its current state mainly covers Aldersey and her school in Ningbo, future research will explore her contemporaries who operated schools for girls in Southeast Asia.

Consequences of Disciplinary Action: A Case Study of Latino/a Students in Secondary Education

Jeannette Hernandez | Sociology

Disciplinary action rates have increased significantly due to the implementation of zero tolerance policies in schools (Castillo 2014). While proponents of zero-tolerance policies argue that these practices make schools safer, research suggests that zero-tolerance policies have not actually improved school safety but instead remove students from the classroom and interfere with their education (Noguera 2003; Peguero, Bondy, and Shekarkhar 2016; Skiba 2006). This qualitative study captures the experiences of Latina/o students who have experienced disciplinary action in California secondary schools. Drawing on in-depth interviews with Latino/a students suspended for fighting, substance use, and failure to turn in work, I find that students perceive disciplinary actions as (1) leading to stigma (2) interfering with schoolwork (3) further disciplinary action, and (4) exclusion from extracurricular activities. From participants' perceptions, punitive disciplinary action is not effective in deterring unwanted behavior. I argue that punitive and exclusionary disciplinary practices do not deter unwanted behavior and that engaging students in extracurricular activities could influence behavior in positive ways.

Teaching SFBT to Graduate Students: What works

Varsha Suresh | Couple and Family Therapy

This presentation is aimed at identifying and presenting helpful methods of teaching Solution Focused Brief Therapy (SFBT) to Couple and Family Therapy graduate students. The presentation will focus on the aspects of SFBT, that students often use while providing therapy for their clients. The presentation will be discussion and dialogue based and will have personal anecdotes, activities, and interactions with the audience.

Key: Solution Focused Brief Therapy, graduate students, couple and family therapy models.

“No one’s getting smarter, no one’s learning the score”: San Diego’s Surveillance of Youth and the Border in the 1950s

Doris Morgan Rueda | History

The increasing age segregation of American society and the rise of a separate youth culture helped to set the stage for a moral panic about juvenile delinquency during the 1950s. My scholarship aims to bridge the social history of youth in border towns with legal and policy history. I examined a debate between law enforcement and social workers in San Diego about who should take the lead in delinquency prevention and control. In 1955, San Diego issued a public pamphlet outlining their strategy to prevent juvenile delinquency. While the reality of juvenile delinquency in San Diego was not as dire as public officials feared, this policy represented anxiety over youth and the border. My research makes two contributions to the existing literature on American juvenile justice. First, it uses a borderlands perspective to understand how the 1950s moral panic about juvenile delinquency played out in the Southwest. The fear of juvenile delinquency became imbedded in the perceived dangers of crossing the border and was a response to an imagined foreign source of danger. Second, my research builds on the works of scholars who are moving the field beyond its institutional focus on the everyday operations of juvenile courts. The theory of “soft authority policing” examines interactions between youth and adult authorities that did not necessarily lead to arrests or court appearances but expanded the power of the state over children and their families. This work helps us to understand the architecture of modern surveillance systems for policing children.

Keywords: Juvenile justice, border, U.S-Mexico border, San Diego, youth, childhood, history, legal history, public policy, juvenile delinquency

The effect of customer-based interaction on diner's satisfaction –Examine the difference between solo diners and group diners

Wenjia Han | Hospitality Administration

Research objectives

This study filled the research gap by examining the impact of customer-based interactions on the satisfaction of solo diners and group diners respectively. The differences between the two groups were addressed, and empirical recommendations were made.

Statement of methods

Using the critical incident technique, an online survey questionnaire with a between-subjects factorial design was employed to collect data on participants' dining experience. Fifty-four responses were used for data analysis. Through linear regression analysis, this study examined the effects of three types of customer-based interactions on satisfaction and the relationship between satisfaction and re-patronage intention. One-way ANOVA was performed to analyze how satisfactions differ by mealtime and how re-patronage intentions differ by restaurant type. A thematic content analysis was performed to explain the behavioral difference between solo diners and group diners.

Key findings

Customer satisfaction had a significant positive influence on re-patronage intentions. The satisfaction of solo diners was associated with price/value and the quality of service interaction. Content analysis indicated that solo diners dislike being disrupted by others while eating. For group diners, food quality/reliability and perceived customer-to-customer interaction significantly influenced their satisfaction. For both groups, service speed was valued.

Conclusion/ recommendations

Solo diners appreciated the interactions with restaurant employees. Service providers could improve customer satisfaction by having more conversation with solo diners.

Stress and Coping in Food-Insecure African Americans in Clark County, Nevada

Johanna Andrews | Environmental and Occupational Health

Food insecurity is defined as the lack of reliable access to nutritionally adequate and safe foods for an active and healthy life for all household members. Although millions of American households experience issues with food access every year, African Americans in particular, have the highest rates of food insecurity than any other racial/ethnic group in the nation. African Americans are more likely to lack access to healthy and affordable food as a result of disparate levels of poverty, lower household income, and unemployment as well as food injustice, food mirages and racial segregation. This consistent uncertainty in food access demonstrably results in poor mental health outcomes for food-insecure African Americans. Thus, the Transactional Model of Stress and Coping provides a conceptual framework to investigate how African Americans cope with food insecurity. The purpose of this study is to evaluate processes of coping with food insecurity and determine their impact on emotional well-being for African Americans in Clark County, Nevada. A total of 495 clients accessing emergency food services in Clark County completed pencil and paper surveys during August to December 2019. The quantitative data will be analyzed using SPSS version 25 via descriptive statistics, Spearman's rank correlation, mediator model using PROCESS, multiple regression, and an ANOVA. The results of this study will contribute to the understanding of how African Americans cope with the stressor of food insecurity, which will facilitate cognizing their coping processes to develop a multilevel culturally relevant approach to tackling this problem.

**"The Uniform of the United States Does Not Protect
the Disturber of the Public Peace": Tensions between
Black and White Union Soldiers and the Southern
Population, 1865-1868**

Shae Smith Cox | History

This paper examines the interactions and relationships between African American soldiers, white Union soldiers, and the militarized southern population that occurred because of the role of Black soldiers in the South from 1865 through 1868, not only as enforcers of reconstruction policies, but as men wearing the uniform of the United States Army. After the war, racial tensions heightened between white and Black Union soldiers, which did nothing to counter the objections of white southerners to seeing uniformed Black soldiers who continued to occupy their cities. The complaints and tensions among white southerners toward African American soldiers ranged from simple disturbances to violent outbursts. I argue that the presence of uniformed Black soldiers increased the animosity that white southerners felt toward the Union, which they saw as responsible for changing those men from slaves to figures of authority in Union blue. The escalation of violence, specifically relating to Black men in Union uniform, confirms the link between the hatred white southerners felt toward the North's authority and the authority the uniforms embodied, and in turn helped inspire violent retaliation by white terrorists groups and former Confederates who donned their old uniforms in pursuit of intimidation and authority.

.

POSTER SESSIONS



GRADUATE & PROFESSIONAL STUDENT RESEARCH FORUM

2020

**Education Poster Session –
Ballroom**



PRESENTATIONS:

9:00 - 9:15 AM	#1 Elizabeth Messina, Educational and Clinical Studies
9:15 - 9:30 AM	#2 Lucas Graff, Educational Psychology & Higher Education
9:30 - 9:45 AM	#3 Heather Thompson, Educational Psychology & Higher Education
9:45 - 10:00 AM	#4 Erdogan Kaya, Teaching & Learning
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#5 De’Ana Mauldin, Teaching & Learning
10:45 - 11:00 AM	#6 Maryam Mohieddin Rad, Teaching and Learning
11:00 - 11:15 AM	#7 Cecilia Turman, Teaching and Learning
11:15 - 11:30 AM	#8 Ezgi Yesilyurt, Teaching and Learning
11:30 - 11:45 AM	#9 Michelle Coyner, Educational Psychology and Higher Education

1. The Intersection of Rural Special Education & No Child Left Behind

Elizabeth Messina | Educational and Clinical Studies

The legal requirements of No Child Left Behind and the subsequent Every Student Succeeds Act, were supposed to improve classroom conditions by mandating “highly qualified” teachers in every classroom and demand accountability measures that ensured growth for all students. In rural populations, already subject to teacher shortages, special education programs are impacted twice as greatly. The increased requirements for teachers and state/national accountability measures create a set of circumstances that seem insurmountable. A systematic review of available literature illustrates a lack of contemporary analysis of the lasting effects of NCLBA / ESSA on rural special education programs. This literature review examines all available literature, including 20 qualitative studies and four quantitative studies, and examines teacher and administrator attitudes regarding the provisions, barriers to implementation, and lasting effects. For rural special education students, did these legal mandates really ensure no child (or teacher) was left behind?

2. Student Discipline in Higher Education: A review of Literature

Lucas Graff | Educational Psychology & Higher Education

The purpose is to offer an overview of the literature on student discipline in higher education to initiate discourse around how scholars might further research in this area. This paper utilizes a narrative review as it seeks to integrate results from different methods and procedures. The literature and data were retrieved using library hand searches and the following search engines: ERIC, Google Scholar, and ProQuest. Search terms used to obtain literature on student discipline in higher education included variations of the following: *student, discipline, sanctions, offenders, student conduct, judicial Affairs, and misconduct*.

Student discipline in is an under researched field within Higher Education. A large number of the articles reviewed discuss the lack of empirical research on student discipline in Higher Education.

The lack of research focusing on equity. Scholars have shown that Black boys in K-12 experience school discipline at much higher rates than their white peers. Researchers have also showed Black and Hispanic people are overrepresented in US prisons. It stands to reason this pattern may be replicated in Higher Education.

The lack of research critically analyzing the effectiveness of student discipline processes. Currently, research examining the process of student discipline is confined to how the student discipline process has been implemented at different institutions. While this type of information was imperative to research at the time, Higher Education researchers should now look beyond how these processes are implemented and instead focus on whether these processes meet the educational goals of the process.

3. Seeing Restorative Classrooms in 20-20 Vision: Focus on Repairing Harm

Heather Thompson | Educational Psychology & Higher Education

Restorative Justice (RJ) practices are increasingly gaining popularity in education and school psychology as an alternative to exclusionary discipline systems such as zero tolerance policies (Song & Swearer, 2016). However, another strength of RJ that is neglected in the literature, is its preventative power to shape a healthy class culture and climate for all students. Overall, very little research has been conducted examining the effectiveness of preventative RJ practices (Gregory, Clawson, Davis, & Gerewitz, 2016). The purpose of this paper is to fill this gap in the literature on RJ prevention by presenting a single case study of a preventative RJ intervention.

4. Improving Pre-Service Elementary Teachers' Computational Thinking Teaching Efficacy Beliefs

Erdogan Kaya | Teaching & Learning

With the release of Next Generation Science Standards (NGSS), assessing K-12 science teachers' self-efficacy in Computational Thinking (CT) is an important research gap to study. Bandura defines self-efficacy as awareness of the individual's potential and capabilities to accomplish a goal. Teaching efficacy beliefs of teachers is a significant identifier of teachers' performance and motivation in teaching the specific content successfully; however, K-12 science teachers' CT teaching efficacy beliefs are rarely discussed. Participating pre-service elementary teachers (PSET) were enrolled in an undergraduate elementary science teaching methods course during the Spring and Summer 2018 semesters in a southwestern state university. We administered a CT teaching efficacy beliefs survey at the beginning and end of the related unit (i.e. the intervention). During the intervention, the PSET followed the CT practices by building educational robots, coding visual block based programs, and solving puzzles in the video game: Zoombinis. In this paper, we report the impact of the intervention on teaching efficacy beliefs of PSET. We used SPSS software to analyze our quantitative results. We performed paired samples t-test for the two teaching efficacy beliefs subscales, Personal Computational Thinking Teaching Efficacy (PCTTE) and Computational Thinking Teaching Outcome Expectancy (CTTOE), to measure if there is a significant difference in teaching efficacy beliefs. Our analyzed statistical reports revealed that there is a significant increase between pre and post assessment after PSET are exposed to the CT intervention. Our research findings suggest that introducing CT increases PSET CT teaching efficacy beliefs. Furthermore, based on the results of our exploratory research with PSET, we propose implications of the study for K-12 CT teaching efficacy beliefs and CT education research.

Keywords: Computational Thinking, video games, robotics, coding, programming, K-12 computer science education, teaching efficacy beliefs, self-efficacy, NGSS, elementary, science teaching methods course, pre-service teachers

5. Teaching Interests Viewed by Adolescents of Color in High School

De'Ana Mauldin | Teaching & Learning

Research shows that countless individuals in black, Latino, as well as Native American communities are at risk for not receiving a decent education (Davis, 2003). A narrative often linked to African American and Latino/a student deficits is what persists in public education (Stovall, 2016). To prepare students within these communities for enhanced educational and professional opportunities, measures toward diversifying the teacher workforce in a majority minority school district has occurred. Through qualitative research, an ethnographic study is conducted at an inner-city high school in a large, metropolitan area in the Southwestern United States. The high school serves a large student of color population. Members of an afterschool club dedicated to mentoring high school students of color aspiring to become teachers were the focus for the study. The study describes student perceptions of careers in teaching. Through observation, informal interviewing, and analyzing artifacts and field notes, what is discovered is the wealth of knowledge and experiences held by aspiring teachers of color in preparation for becoming vital assets to the teaching field. This poster presentation will demonstrate how observation and analysis of four afterschool meetings spanning one hour can assist understanding of student of color aspirations for teaching, their perceptions of the teaching field, and measures toward positively impacting their communities through careers in teaching.

6. The challenges and the experiences of the Muslim female Iranian students regarding wearing the Hijab in the united states

Maryam Mohieddin Rad | Teaching and Learning

The United States is a developed liberal country, while Iran is the Islamic Republic developing country. In Iran, there is a ministry of education under the direct supervision of the central government. In the United States, state governments provide overall educational standards. Religious studies are highlighted in every level of education, from K-12 to higher education in Iran. In contrast, there are limited spiritual courses which is provided in special schools at certain levels in the United States. In spite of the fact that the two mentioned education systems have some differences in structure and content, some similarities should be taken into considerations. There is the marginalization of certain groups in both educational systems. In Iran, the education path is full of stone for non-Muslim students, and in some cases, these groups are deprived of education specifically of higher education. In the United States historically, there is the marginalization of people of color, Hispanics, and immigrants. in the education system. Iran has centralized education supervised by the government, and the united states are also moving gradually towards the centralization of education. Both education systems are moving towards centralization. Quality education serves the affluent students in both systems and tends to marginalize the poor and vulnerable students. On the other hand, the immigration of highly educated people from Iran to United States caused Iran to undergo the brain drain and the United States as a developed country to brain gain (Spring, 2015). Almost always, highly educated people in Iran would not find the suitable work equal to their qualifications. That is why they decide to change the path of their lives and leave to find more job opportunities based on their qualification to the mostly developed countries.

7. Personalized and Experiential Learning Approaches to E- Learning

Cecilia Turman | Teaching and Learning

This study aims to provide analysis and application for web based instructional approaches to diverse online courses supported by experiential learning approaches to real field experience. This study was developed with participants who were enrolled in the 2016-2017 AY web based online elementary and secondary classroom management course. 22 new teacher participants were researched. They were unexperienced or had no field experience at all in a large, urban and culturally diverse school district. Data gathered from participants' online anonymous surveys, student and teacher portfolios, and instructor's journals were compared by the researcher. This study is based on novice teachers' learning outcomes and course appreciation. The two courses provided evidence for the findings and analysis, which strongly support both experiential and personalized learning approaches. The assignments and assessments applications into a virtual situated learning created a rich environment for learning that contrasts the common instruction for distance education learning environment.

8. Sources of Self-efficacy in an Engineering Professional Development Program for In- service Teachers

Ezgi Yesilyurt | Teaching and Learning

The Next Generation Science Standards (2013) call for teachers to integrate engineering into their science programs. However, a significant number of elementary teachers do not feel confident in teaching engineering. In this sense, we developed a professional development program focusing on engineering integration to increase practicing teachers' engineering teaching self-efficacy. We conducted a qualitative study to examine what factors associated with the professional development program helped them improve their confidence. Two semi-structured interviews were conducted with 6 in-service teachers to explore the sources of engineering teaching efficacy. The findings indicated that the improved engineering conceptual knowledge, engineering teaching pedagogical approaches, learning from a student perspective and collaborative work among teachers were important factors improving their engineering teaching efficacy.

Keywords: engineering, engineering teaching efficacy, in-service teachers, sources of self-efficacy

9. Who Pays for Athletic Prestige? The Impact of the NCAA Cost of Attendance Policy on Higher Education

Michelle Coyner | Educational Psychology and Higher Education

The NCAA introduced the Cost of Attendance (COA) policy in 2015 allowing Division I schools to provide student-athletes with additional benefits up to each institutions' full COA. We explore the relationship between COA and institutional revenues and expenditures using an original panel dataset documenting timing of COA implementation in DI schools. Not all DI schools adopted the policy and non-DI schools cannot adopt the policy, so we use a difference-in-difference design to produce estimates of the relationship between COA and the financial behaviors of athletics programs and their universities. We find significant increases in athletics expenditures for student-athlete aid, recruiting, and athletic facilities in both Power 5 and non-Power 5 schools. In line with the revenue theory of costs, COA adoption in these schools is associated with significant increases in revenue, primarily from corporate sponsorship, advertising, and licensing in the Power 5 schools, and from donor contributions in non-Power 5 schools. We also find increases in tuition revenue at COA-adopting institutions, and determine that this is mostly due to increased enrollments. We discuss the implications of the NCAA COA policy for inter-institutional competition and the financial behaviors of chasing prestige.

Keywords: *NCAA; college athletics; higher education finance; policy; difference-in-difference*

**Social Science Poster Session A –
Ballroom**



PRESENTATIONS:

9:00 - 9:15 AM	#10 Laura Benedict, Anthropology
9:15 - 9:30 AM	#11 Lyndsey Craig, Anthropology
9:30 - 9:45 AM	#12 Aislin Edalgo, Anthropology
9:45 - 10:00 AM	#13 Jeffrey Taylor, Music
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#14 Daniel Perez, Anthropology
10:45 - 11:00 AM	#15 Alesha Pettit, Anthropology
11:00 - 11:15 AM	#16 Elizabeth Shikrallah, Anthropology
11:15 - 11:30 AM	#17 Benjamin Van Alstyne, Anthropology
11:30 - 11:45 AM	#18 William Willis, Anthropology
11:45 - 12:00 PM	#19 Kayleigh Meighan, Anthropology

10. Dinner in the Desert: A Faunal Exploitation Investigation at California Wash, a Preliminary Analysis

Laura Benedict, Virginia L. Lucas | Anthropology

The subsistence practices of people utilizing the California Wash in southern Nevada, northeast of Las Vegas, are not yet well understood. Analysis of the faunal material collected during excavations at three rockshelter sites located in the Dry Lake Range within the California Wash enhances our understanding of the subsistence practices of the people who used the area. This poster presentation provides an updated analysis of those faunal materials collected at rockshelters Tranquility (26CK1112), Dry Lake Range #3 (26CK1113), and Rattlesnake Shelter (26CK1081) along with two associated roasting pits. Radiocarbon dates suggest occupations during the Early Basketmaker II era (Tranquility), the Basketmaker III era (Dry Lake Range #3), and the Pueblo II period (Rattlesnake Shelter). Early analysis indicates a dietary dependence desert tortoise (*Gopherus agassizii*) with chuckwalla (*Sauromalus ater*) as a distant second preferred species. A reliance on reptiles in this area contrasts sharply with the dependence on artiodactyls such as bighorn sheep (*Ovis canadensis*) and mule deer (*Odocoileus hemionus*) that were utilized by surrounding communities.

11. Signaling at Work: US Ratings of Variable Male Facial Hair among Servers, Mechanics and Executives

Lyndsey Craig, Jorge Paiz-Say, Peter B. Gray | Anthropology

The ability to grow facial hair might have increased ancestral male attractiveness, serving as an honest signal of men's health and dominance. Human male beardedness may have signaled social status, age and strength, much like male ornaments in other non-human primates. Given ancestral social signaling value of male facial hair, how does male facial hair function in our contemporary jobs? Many industries in the United States have regulations regarding male facial hair, such as service industry requirements that beard nets be worn during food production or bans on facial hair entirely. In this study, we surveyed $N=250$ US men and women online, ages 18-25, about sociodemographics and attitudes toward male facial hair. Participants rated a randomized series of nine images of a composite male model with facial hair in one of three workplace settings—server, mechanic or executive—on six work-related characteristics: for example, *work quality* and *expertise*. Types of facial hair were group into four categories: *clean shaven*, *partial* (e.g., Van Dyke and soul patch), *stubble* and *beard*. Preliminary results suggest that respondents perceived variable degrees of male facial hair differently among the three workplace groups. For example, a *clean shaven* server is perceived to have greater *ability to perform tasks* and *work quality*, whereas a *bearded* mechanic is perceived to have greater *ability to perform tasks*, *work quality*, and *expertise*. These data indicate job-specific evaluations of male facial hair as approximate indicators of work-related characteristics that can be situated within an evolutionary- and culturally-evolved signaling framework.

12. Political ideology and public expression at Humboldt State University

Aislin Edalgo | Anthropology

This research examines the relationships between a politically salient event, the election of President Donald Trump, the lifetime cumulative influences on an individual's political ideology and their public expression of political beliefs. This research uses a student sample population from Humboldt State University (HSU) in Northern California USA from spring of 2017 to spring of 2018, with the bulk of data collection occurring during fall of 2017. This project utilizes surveying, interviewing and participant observation with students and faculty members at HSU, with the primary focusing being on students, their political speech and the lifetime influences on their political ideologies. It was found that politically salient events influence public expressions of political belief and that expression of political ideology can be mediated by life stages and events.

13. The Drums of a Subculture: A Study of the History, Impact, and Evolution of Non-pitched Percussion in Sample-based Hip-Hop

Jeffrey Taylor | Music

Hip-Hop is an artform rooted in sampling, the process of appropriating sounds from previously recorded material, and subsequently creating a new musical work from the sampled sounds. While many scholars have examined the practice of sampling, none have researched the history and impact of percussion-based samples on the evolution of hip-hop. My research will include an extensive list of studies on sampling, an examination of a vast amount of popular music, and interviews with scholars and musicians in the field. I will document the origins of non-pitched percussion-based samples in hip-hop and include the most-utilized drum breaks in the history of the genre. I will develop an understanding of the specific genres of music that have heavily influenced hip-hop, and the evolution resulting from the musical borrowing. Finally, I will create a timeline of the critiques and adjustments made in the field. I am looking to explore the role of non-pitched, percussion-based samples in the history and development of hip-hop. Ultimately my goal is to uncover the percussive foundation of the music, and to provide a deeper understanding of the genre.

14. The Daily Grind: Virgin Branch Puebloan Subsistence Technology on the Colorado Plateaus

Daniel Perez | Anthropology

Archaeological investigations pertaining to the Western Colorado Plateaus District of the Virgin Branch Puebloan region have historically been limited in both number and scope. Recent expeditions to various sites on the Grand Canyon-Parashant National Monument, however, have helped expand the archaeological record of this cultural area—contributing a greater depth of knowledge concerning Virgin Branch Puebloan occupation of the area in late prehistory. The framework for this research comprises understanding Virgin Branch Puebloan subsistence practices (namely, grinding technology) through comparison of a use-wear analysis on ground stone recovered from several sites on the Shivwits Plateau of northern Arizona against experimental grinding activities. This research presents the results of experimental grinding patterns observed through the processing of cognate organic materials found within Virgin Branch Puebloan sites (e.g., corn, seeds). The juxtaposition of both use-wear analysis data and experimental grinding activities are discussed in the context of broader themes of Virgin Branch Puebloan subsistence, economy, and potential exchange relationships during the Pueblo II-III periods.

15. Covariance among the zygomatic bone, the frontal bone, and the zygomaticotemporal space

Alesha Pettit | Anthropology

This study analyzes the zygomatic shape, eye orbit shape, zygomaticotemporal space, and frontal bone of multiple primate species. Integration of these morphological regions has implications for evolutionary changes and constraints among primates. Specifically, this study analyzes the association of brain size, vision, mastication, and evolutionary morphological changes to the upper face among primates; this study explores what this might signify regarding human evolution and evolutionary constraints due to functional relationships of vision and mastication. CT scans of primate skulls were analyzed using the biomedical software AnalyzePro, which yielded 3 dimensional coordinates. The Paleoanthropology Lab at UNLV has access to gorilla, chimp, and hominin skull CT scans, and CT scans from The Morton Collection at the University of Pennsylvania were used for the human component. Morphometric and statistical analyses from Morphologika, MorphoJ, and Excel were used to determine the statistical significance among the different primate species. Specific hypotheses include 1) the zygomatic bone shape covaries with frontal bone shape, 2) frontal bone shape covaries with eye orbit shape, and 3) frontal bone shape covaries with the zygomaticotemporal space. Previous studies have shown a relationship between the zygomatic bone and the eye orbit, but this study expands on this idea to include the entire shape of the frontal bone, capturing the relationship between the brain, vision, and mastication. Simply, the evolutionary relationship between the multiple bones of the face and the size and shape of the brain is likely more complex than previous studies have shown.

16. Digging Digitally: Utilizing Digital Technologies in Archaeological Projects

Elizabeth Shikrallah | Anthropology

Digital technologies have been gaining in popularity in archaeology over the last couple of decades; however, their contributions to archaeological research still goes largely unnoticed by those who have not used them for this kind of research before. They can allow for more detailed work, allow for other kinds of research within archaeology, and can make research more accessible and easier to understand to those outside of the discipline. Using examples from ongoing archaeological projects, this poster will demonstrate what digital technologies like GIS and others are capable of within archaeology.

17. Archaeological Investigations at a Multi-component Site on the Shivwits Plateau

Benjamin Van Alstyne | Anthropology

During the summer of 2019, members of the University of Nevada, Las Vegas excavated two rooms within Pete's Pocket, a Virgin Branch Puebloan site located on the Shivwits Plateau, Arizona. The rooms, which were located about 300 meters from the north rim of the Grand Canyon, were contiguous and circular, forming an almost Figure 8 shape. An unusually large amount of architectural rubble was associated with one of the rooms, suggesting it likely had been a tower. The second room contained numerous handstones on its floor, and a piece of leather within its wall. The implications of these findings are discussed.

18. The Role of Small Habitation Sites in Virgin Branch Puebloan Settlement Systems

William Willis | Anthropology

Recent archaeological work on the Shivwits Plateau in Northern Arizona has focused on the distribution and purpose of small habitation sites among the Virgin Branch Puebloan culture. Preliminary data suggests that these small sites contain a high degree of variation in terms of their placement on the landscape, and their function in Virgin Branch society. This research looks at some of this variation within the context of how the Virgin Branch interacted with their environment to buffer against ecological risk.

19. Maternal Disparities in Birth Experiences Across Demographic Groups in Alabama

Kayleigh Meighan | Anthropology

According to the Centers for Disease Control, Alabama had the United States' highest infant mortality rate (IMR) in 2014. The Alabama Department of Public Health reported in 2015 the IMR for White residents was 5.2%, but among Black and Other residents it was 14.4%. Here, I provide geographical data on IMR by county and demographic group, location of hospitals with obstetric centers, rural and low income communities across Alabama, in addition to case studies to better understand the implications of Alabama's IMR and to address factors in the overall gap in treatment between demographic groups. Data suggest the IMR tends to be highest for Whites in rural counties, and especially those with fewer hospitals in the region, but higher for African Americans in counties surrounding large cities. Case studies of birth experiences from low-income minority women in rural areas were compared to case studies of higher income women from urban and suburban areas. Obstetric care experience for rural-dwelling minority women was characterized by different barriers than for urban- and suburban-dwelling women, such as access to care and transportation. These narratives, when combined with geographical analyses, elucidate treatment gaps in underserved populations that inform where improvement can be made in Alabama's obstetric care. This study highlights how human reproduction is affected by structural issues and their biological implications impacting communities across the United States, exacerbated by the lack of access to care.

**Social Science Poster Session B –
Ballroom**



PRESENTATIONS:

8:45 – 9:00 AM	#20 Michelle Strong, Psychology
9:00 - 9:15 AM	#21 Erick Rogers, Psychology
9:15 - 9:30 AM	#22 Elena Gavrilova, Psychology
9:30 - 9:45 AM	#23 Tevfik Demirciftci, Hospitality Administration
9:45 - 10:00 AM	#24 Demi Kourtesi, Psychology
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#25 Kirsty Kulhanek and Stephanie Verba, Psychology
10:45 - 11:00 AM	#26 Karolyne Stucki, Psychology
11:00 - 11:15 AM	#27 Denise H. R. Molintas, Hospitality Administration
11:15 - 11:30 AM	#28 Samantha Sherwood, Psychology
11:30 - 11:45 AM	#29 Yen-Ling Chen, Psychology

20. The Importance of Various Cultural Domains in Athletes

Michelle Strong, Johnson, Katherine; Hill, Joy; Gavrilova, Elena; Donohue, Bradley | Psychology

There are numerous calls for investigators to examine how culture impacts college athletes. However, limited studies have examined the importance of various cultures to athletes. In this study, the importance of 7 cultures that have been identified in the literature (i.e, gender/sexual identification, religion, ethnic, sport, religious/ spiritual, academic, work/ employment, greek) were compared between NCAA athletes and Club/Intramural athletes. Sixty-two participants (NCAA, $n = 38$; 61%; CI, $n = 24$; 39%) from a Division 1 southwestern university rating of the importance of the aforementioned cultural domains (e.g., 1 = extremely disagree to 7 = extremely agree). Eight independent samples t-tests were used to compare ratings of importance for each of these culture domains between NCAA & CI athletes. NCAA athletes rated the importance of Ethnic culture significantly lower ($M = 3.82$; $SD = 1.74$) than CI athletes ($M = 4.83$; $SD = 1.43$), $t(60) = -2.40, p = .02$. CI athletes rated the importance of Greek culture higher ($M = 2.67$, $SD = 1.58$) than NCAA athlete's ($M = 1.68$, $SD = 1.19$), $t(60) = -2.79, p = .01$. After Bonferroni post-hoc correction, Greek culture ratings remained statistically significant. These data indicate that CI athletes rate Greek culture as important significantly more than NCAA athletes. These results will coaches and clinicians on the importance of culture to athletes and in turn help improve services.

21. Callous-Unemotional Traits are Not Related to Reward Seeking

Erick Rogers | Psychology

INTRODUCTION

Reward processing results in emotion through the interpretation and response to approach of positive stimuli and avoidance of negative stimuli. Psychopathy have been linked to emotional impairment. Specifically, individuals higher in callous-unemotional traits (CU) tend to display emotional deficits in response to reward processing. Individuals high in CU traits tend to engage in less reward seeking and have reduced activity in reward-related brain regions for both adolescents and young adults. Individuals high in CU traits do not always display lower reward seeking. The purpose of this study is to further examine the association between reward seeking and CU traits in adults from a large, well-powered study using multiple reward tasks.

METHODS

There were 605 participants (67% female, $M = 20.25$ years). Callous-Unemotional traits were assessed via the Inventory of Callous-Unemotional traits (ICU). Impulsivity was assessed via the Barratt Impulsiveness Scale (BIS-11). Reward seeking was assessed via the Balloon Analogue Risk Task (BART) and the Columbia Card Task (CCT).

RESULTS

Callous-unemotional traits were not significantly associated with reward seeking across two tasks. Women tended to engage in less reward seeking than men. Bayes factors indicated moderately strong evidence of no relationship between CU traits and reward seeking.

DISCUSSION

Results are consistent with prior work suggesting individuals with high levels of CU traits may not engage in more or less reward seeking behavior. Individuals with high levels of callous-unemotional traits might anticipate or respond less to rewards, but that does not necessarily change their reward seeking behavior.

22. Empirical development of a screening method for mental, social, and physical wellness in amateur and professional circus artists

Elena Gavrilova, Al Light M. | Psychology

There is limited information available to assist evidence-supported detection and referral of mental, social, and physical health issues affecting performance in circus artists. Therefore, this study examines mental, social, and physical health of artists in 2 circus settings (circus school, professional circus). The specific aims were to assess overall health and develop data-informed wellness screening methods in these populations, assisting referral guidelines for performance and health optimization. A comprehensive psychometrically validated battery of standardized measures was administered to 109 professional circus artists employed by Cirque du Soleil and students enrolled in the National Circus School. Compared with students, professionals reported significantly fewer problems with social isolation, fatigue, and factors that interfere with circus performance specific to shows/evaluations; they also reported greater satisfaction in their social roles and overall circus performance. Professionals also reported significantly less severe depression, and greater receipt of emotional and informational support compared with normative samples. Scores of students were similar to those of normative samples, although their scores measuring anxiety and fatigue were higher. There were no significant differences between professionals and students in perceived interferences during training, or circus-related problems with coaches and classmates/coworkers. For all participants, scores on measures of mental, social, and physical health were negatively associated with factors reported to interfere with circus performance. Participant responses to the measures were used to develop guidelines to facilitate detection of factors interfering with performance and to assist informed referrals.

23. Competitive Intelligence in the Hospitality Industry. Perspectives of Turkish Revenue Managers. A Pilot Study.

Tevfik Demirciftci | Hospitality Administration

The purpose of this study is to investigate the competitive intelligence (CI) activities of revenue managers who work in Istanbul. Therefore, a qualitative method was adopted. 10 revenue managers who work in international chain hotels were sent an online questionnaire, which has seven open-ended questions about CI activities. According to the survey results, it seems that they know what the meaning of CI and the importance of CI are. As a CI activity, they monitor Smith Travel Research reports daily, check competition through rate shopping tools and use social media actively to monitor the external environment. However, there are several ethical problems regarding CI activities according to revenue managers who work in Istanbul.

Keywords: Hospitality, Revenue Management, Competitive Intelligence (CI), Istanbul

24. Culturally Sensitive Psychopaths

Demi Kourtesi, Gaithri Fernando, Arianne Fisher
| Psychology

One conceptual model of psychopathy, the triarchic model, groups psychopathic traits into three factors: boldness, meanness, and disinhibition. Research utilizing samples recruited from the individualistic nations of North America has reliably found higher prevalence rates of psychopathy compared to research conducted in Europe. Cultural norms that either encourage or discourage the expression of psychopathy may underlie the differences seen in prevalence rates. The purpose of the current study was to examine the relationship between psychopathy and culture. A community sample of 517 participants (Americans = 265, Greek-Americans = 44, Greeks = 137, Other = 59) whose ages ranged from 18 to 87 years ($M = 31.4$, $SD = 15.2$) completed a survey that included measures of psychopathy and cultural orientation. Individualism was positively correlated with psychopathy ($r = .30$, $p < .001$), while no relationship was found between collectivism and psychopathy ($r = -.08$, $p > .05$). Additionally, the three cultural groups differed significantly on boldness, $F(3, 501) = 3.71$, $p < .05$, and disinhibition, $F(3, 501) = 6.85$, $p < .001$. No significant differences were found on scores of meanness, $F(3, 501) = 2.07$, $p > .05$. These results point to the importance of considering cultural elements in our efforts to obtain a comprehensive picture of the risk factors of psychopathy. In this study, breaking down a unified construct such as psychopathy into its core components lent greater insight into the specific psychological mechanisms affected by cultural norms, providing a clearer picture for researchers and clinicians.

25. Self-Esteem and Perspective-Taking Predict Adult Flexibility in the Attractiveness Domain

Kirsty Kulhanek and Stephanie Verba, Jennifer L. Rennels, | Psychology

Previous research suggests that self-esteem and perspective-taking may contribute to bias and flexibility. Specifically, lower self-esteem is associated with more negative perceptions of others (Crocker & Schwartz, 1985; Graham & Perry, 1976) and perspective-taking contributes to less stereotypic and more flexible beliefs of unfamiliar targets (Galinsky & Moskowitz, 2000). Given the negative effects of bias and positive effects of flexibility, we investigated whether undergraduates' ($N = 87$) self-esteem and perspective-taking predicted these beliefs in an effort to elucidate pathways to reduce bias and increase flexibility.

Undergraduates' self-esteem and perspective-taking ability positively predicted their flexible thinking, but not their bias, consistent with findings from middle childhood and adolescent participants (Verba, 2018). Interventions and trainings that target self-esteem and perspective-taking might increase flexible thinking in the attractiveness domain, but further research is needed to examine predictors of bias. Because flexibility is related across domains (Rennels & Langlois, 2014), future research should investigate whether perspective-taking and self-esteem also predict flexible thinking about gender and race.

26. A Systematic Review of Mental Health in Athletes

Karolyne Stucki | Psychology

Introduction: Athlete mental health has gained widespread public attention in applied research (Donohue et al. 2004). In this study, a comprehensive and systematic review of current athlete mental health prevention and intervention services was conducted. *Methods:* A series of keywords (Mental health AND athlete*, Mental Wellness AND athlete* Mental health AND sport, Psychological Disorder AND athlete*, Mental Wellness AND sport, and Psychological Disorder AND sport) were selected to be searched using multiple psychology databases. Exclusion and inclusion criteria were developed to ensure articles chosen are relevant, current, and representative. The PRISMA model for systematic reviews was utilized to maintain standardization and efficiency. The research articles found were then broken up by topic using a grid for easier analysis. A qualitative and quantitative synthesis of the results was done. *Results:* This review resulted in an all-inclusive analysis of the status of the current research on the mental health prevention and intervention services specific to athletes from 1998 to 2019. Results indicated very few clinical trials, particularly controlled clinical trials, supporting mental health optimization in athlete population.

27. Role of Emotions During a Short Service Encounter

Denise H. R. Molintas, Solbi Lee, James A. Busser,
Lenna V. Shulga | Hospitality Administration

Based on appraisal theory of emotions, this study aimed to understand the role of emotions in the short service encounter on future customer emotional engagement and the long-term relational outcome of trust through an integrated model. Guests (n=327) completed intercept surveys at four mega-resorts shortly after check-in. Interaction of a-priori loyalty, check-in emotion and resulting satisfaction influenced customer emotional engagement and trust in the service provider. Emotional engagement served the mediation role for the integrated model. The study extends appraisal theory of emotions and practical implications for hospitality managers.

Keywords

Short service encounter, emotion, appraisal theory, emotional engagement, a priori-loyalty, trust

28. Impact of Demographics on Longitudinal Trends in Inpatient Pediatric Bipolar Disorder Diagnosis

Samantha Sherwood | Psychology

Introduction: Diagnosis of pediatric bipolar disorder (PBD) increased substantially from the mid-1990s to mid-2000s among children and adolescents. Trends in diagnosis of PBD were different based on demographics. For example, boys were more likely to be diagnosed than girls. However, a meta-analysis of epidemiological findings indicated no change in the rate of PBD nor differences in the rate based on demographics. We examined whether demographic correlates influenced trajectories of inpatient PBD diagnosis from 1996-2010.

Methods: Data were the National Hospital Discharge Survey conducted annually by the National Center for Health Statistics. Children were ages 5-13 and adolescents were ages 14-18. Logistic regression models with replicate weights were used to predict the odds of PBD diagnosis by survey year from age group, gender, race, insurance type, and geographic region of the U.S.

Results: PBD diagnosis increased until 2005 and then decreased, $p < .001$. The increase and decrease in diagnosis was more rapid for children than adolescents. White youth were 2.72 times more likely to be diagnosed with PBD than Black youth. Privately insured youth were 1.71 times more likely than government-insured youth. Youth in the South were 2.02 times more likely than youth in the rest of the US. Diagnosis did not vary by gender.

Conclusions: The increase in PBD diagnosis observed in the early 2000s has begun to decline, particularly for children. Demographic characteristics influence the rate of diagnosis, but the differences were consistent across the time period. Further research is needed to identify why clinical diagnoses differ by demographic factors.

29. Identifying Risk Factors for Youth Hospitalization in Crisis Settings: A Classification and Regression Tree (CART) Analysis

Yen-Ling Chen | Psychology

Background: Community efforts to provide lower-cost, high intensity, community-based care have been championed as a potential alternative to psychiatric hospitalization. However, for alternative services to be effective, clinicians must be able to efficiently and accurately distinguish between youth in need of psychiatric hospitalization and youth who can be stabilized in the community. Therefore, the purpose of the current project is to develop an identifiable decision tree model that clinicians could use to aid in the acute psychiatric hospitalization decision-making process.

Method: Data consisted of 2,726 youth ($M=14.06$, $SD=2.74$, 56% female) who utilized the Mobile Crisis Response Team in the State of Nevada between 2014 and 2017.

Results: Random forest modeling indicated 13 variables were critical to the decision-making process. A CART model including these variables created several pathways leading to hospitalize and do not hospitalize decisions. For example, the most prevalent pathway (74% of referrals) was a “do-not-hospitalize” pathway, consisting of youth who presented without current ideation for suicide, without acute homicidal ideation, and had no evidence/history of psychosis. Youths in this pathway were rarely hospitalized ($NPV=.97$).

Discussion: The current study helps improve the efficiency and accuracy of risk assessment for youth hospitalization. The results provide functional roadmap to clinicians to help make the hospitalization decision. Future directions include cross-validating the current model in a new sample. Developing standardized, clinically realistic case vignettes with known empirical hospitalization risks can serve as a training tools to help introduce new clinicians to high risk decision-making.

**Social Science Poster Session C –
Ballroom**



PRESENTATIONS:

9:15 - 9:30 AM	#30 Kevin Mohawk, Psychology
9:30 - 9:45 AM	#31 Hana Kuwabara, Psychology
9:45 - 10:00 AM	#32 Julia Maietta, Psychology
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#33 Andrew Ortiz, Interdisciplinary Health Sciences – Psychology
10:45 - 11:00 AM	#34 Megan Shope, Psychology
11:00 - 11:15 AM	#35 Matthew Khumnark, Psychology
11:15 - 11:30 AM	#36 April Contreras, Psychology
11:30 - 11:45 AM	#37 Lauren Crew and Adam McNeela, Psychology

30. The Time Window of Reconsolidation

Kevin Mohawk | Psychology

Reconsolidation is a process by which a consolidated memory that has been destabilized by reactivation is updated, strengthened, or weakened by the re-stabilization of the trace. Evidence of reconsolidation has been found in several studies but has also been challenged. The goal of this replication is to test the critical assumption that reconsolidation is a time-dependent process. Hupbach, Gomez, Hardt, and Nadel (2007) conducted several experiments demonstrating that memory updating is only found when the reconsolidation process has time to complete. This finding strengthens the reconsolidation hypothesis and challenges other accounts of memory updating (e.g., context/interference accounts). Because this finding is critical to the reconsolidation hypothesis, we are conducting a direct replication of this effect in a 3-day paradigm, but not in a 2-day paradigm. On Day 1 in both paradigms, participants learn a list of 20 objects. In the 3-Day condition, participants come back to lab 48 hours later and are reminded of list 1 (reminder condition) or not (no-reminder condition) prior to learning list 2. A control group will skip Day 2 entirely. On Day 3, all participants are tested on list 1 memory. The 2-Day condition is identical, with the exception that participants take a 5 minute break after learning list 2 and then take a test on list 1 (they do not come back for Day 3). Successful replication would be evident if there are more intrusions from list 2 into list 1 memory in the 3-day reminder condition than in any of the other conditions.

31. Frequency of Sports-Related Concussion in Athletes with Neurodevelopmental Conditions

Hana Kuwabara, Sarah M. Flood, Julia E. Hussey, Brandon C. Fraga, Thomas F. Kinsora, Staci R. Ross, Daniel N. Allen | Psychology

Objective: Research demonstrates that athletes with neurodevelopmental diagnoses may have a higher frequency of lifetime concussions (Iverson et al., 2016; Alosco, Fedor & Gunstad, 2014) possibly due to underlying attention, processing speed, or reaction time difficulties. The present study investigates concussion history and sports-related concussions between athletes with and without a history of neurodevelopmental disorders in a longitudinal, state-wide sample.

Method: Participants included 39,586 high school athletes ($M_{age}=15.18$; 56.2% males) who were assessed pre and post-concussion with ImPACT between 2008 and 2016. There were 36,880 athletes (55.1% males) who did not report neurodevelopmental disorders and served as the control group and 2,706 athletes (71.4% males) in the clinical group who self-reported diagnosis of ADHD (55.6%), Learning Disability (LD; 13.6%), Autism (3.2%), ADHD+LD (4.5%), and athletes in special education but no reported diagnosis (SpEd; 22%). Concussion frequency in each group was analyzed using chi-square analysis.

Results: Athletes were more likely to report prior concussions if they had a self-reported neurodevelopmental diagnosis (17%) compared to the control group (9%, $\chi^2(1) = 112.11, p < .001$). Odds ratios indicated that athletes with neurodevelopmental conditions were 1.43 times more likely to have a sports-related concussion.

Conclusions: Consistent with past research, results indicate that neurodevelopmental conditions are associated with greater lifetime risk of concussion, including sport-related concussions. Future studies may expand this research by examining underlying causes of this increased risk in order to develop specific interventions to help reduce rates of concussion for this population.

32. Performance of ImpACT validity indices for athletes with neurodevelopmental history

Julia Maietta, Hana C. Kuwabara, Winnie W.Y. Ng,
Thomas F. Kinsora, Staci R. Ross, Daniel N. Allen
| Psychology

Objective: Research demonstrates neurodevelopmental diagnoses may increase likelihood of failing scores on ImpACT embedded validity indicators that flag questionable effort. New criteria have been proposed to enhance sensitivity of these indicators although their utility in athletes with neurodevelopmental diagnosis have not been thoroughly examined. This study investigates the effect of neurodevelopmental history on frequency of invalid performance on the standard and three proposed validity indicators.

Methods: Participants included 41,214 high school athletes ($M_{age}=15.1$; 44.2% female; $M_{education}=9.1$) who completed baseline ImpACT testing. Athletes included these groups: ADHD (3.7%), Learning Disability (LD; 1.5%), Autism (0.2%), ADHD+LD (0.6%), Autism+ADHD/LD (0.1%), athletes with special education history but no diagnosis reported (SpEd; 2.8%), and healthy athletes (91.1%). Odds ratios were calculated to determine differences in invalid performance by both standard and proposed cutoffs.

Results: Neurodevelopmental disorder was associated with increased invalid performance using standard and proposed cutoffs with odds ratios ranging from 1.32 to 3.25. Invalid performance differed significantly across groups for both standard and two sets of proposed criteria (chi square $p<.00001$). For standard cutoffs, athletes with ADHD, LD, and ADHD/LD were significantly more likely than healthy athletes to have invalid performance. This pattern remained similar across the two sets of proposed criteria.

Conclusions: Results indicate increased incidence of invalid ImpACT performance based on standard and proposed validity indicators in athletes who self-report neurodevelopmental disorders. Findings indicate current and proposed cutoffs may not accurately capture low effort for neurodevelopmental populations. Future research should examine utility of separate cutoff criteria and expanded norms for athletes with neurodevelopmental history.

33. Examining Alterations of GABA (B) Receptors in Hyperglycemia and Alzheimer's Disease Related Pathology

Andrew Ortiz | Interdisciplinary Health Sciences – Psychology

Alzheimer's Disease (AD) is a neurodegenerative disease that is characterized by progressive synaptic and neuronal deterioration, cognitive impairments, and learning and memory deficits. The three core pathological hallmarks of AD are 1) senile plaques, composed of accumulated amyloid beta ($A\beta$) proteins, 2) neurofibrillary tangles, composed of accumulated hyperphosphorylated tau protein (ptau), and 3) a sustained inflammatory response in the brain (chronic neuroinflammation). Several studies have demonstrated that chronic neuroinflammation exacerbates both $A\beta$ and ptau pathology. The exact cause of AD remains unknown; however, several risk factors exist that greatly increase the likelihood of developing AD.

Non-genetic risk factors for AD include age, cardiovascular disease, obesity, and diabetes mellitus (DM). Individuals with DM express high levels of glucose in the vasculature (hyperglycemia) which can confer up to a 4-fold increase of developing AD. Furthermore, an alarming 80% of individuals with AD have DM or are insulin resistant. Both animal and patient data show that DM mice exhibit learning and memory deficits, increased hyperphosphorylation, increased $A\beta$ accumulation, and neuroinflammation.

There is a general loss of γ -aminobutyric acid (GABA) in AD thus making this receptor a target of interest. In the present study we induced hyperglycemia by utilizing a drug called streptozotocin (STZ) in a novel GABA_B receptor knockdown (restricted to macrophages) mouse model (GABA/CX3) to investigate these same hyperglycemic measures as previously mentioned. Our preliminary data indicates altered fasted blood glucose levels, and GABA_B receptor protein differences in response to STZ administration.

34. Early Pubertal Timing and Risk for Disordered Eating in Young Adult Women: Testing the Role of the Leading Theorized Factors

Megan Shope Kristen M. Culbert | Psychology

Early pubertal timing is implicated in risk for disordered eating (DE) and effects persist even after the completion of puberty. Nonetheless, the mechanisms underlying these associations remain unclear. Pubertal increases in adiposity and psychosocial risk (e.g., pressures for thinness, thin-ideal internalization, weight-based teasing) have largely been theorized to account for early pubertal timing effects on DE, yet no studies have tested this possibility. The current study addressed this gap by examining whether higher body mass index (BMI), perceived pressures for thinness, thin-ideal internalization, and history of weight-based teasing mediate the predictive effects of early pubertal timing on DE symptoms. Participants were 358 young adult women. Age at onset of menses was used as the indicator of pubertal timing, and well-validated measures were used to assess DE symptoms and psychosocial variables. Early pubertal timing predicted higher levels of body dissatisfaction and binge eating symptoms. The effect of early pubertal timing on body dissatisfaction was completely accounted for by BMI; conversely, none of the hypothesized factors significantly mediated early pubertal timing effects on binge eating. These data suggest that BMI is important for understanding the long-term effect of early pubertal timing on body dissatisfaction, whereas other unexplored factors (e.g., biological influences) may contribute to early pubertal timing effects on binge eating.

35. Decreased delta oscillations after administration of TSPO ligands Pk11195, Ro5-4864, and FGIN1-27

Matthew Khumnark | Psychology

Translocator protein 18 kDa (TSPO) is a small mitochondrial protein that has been implicated in psychiatric disorders such as Alzheimer Disease, Multiple Sclerosis, and Major Depressive Disorder. TSPO plays a role in multiple cellular functions including, program cell death, hormone signaling, and immune signaling. Drug binding of TSPO has been shown to reduce anxiety, but the underlying mechanism has yet to be determined. This study aims to examine the effects of three specific TSPO drugs, Pk11195, Ro5-4864, and FGIN 1-27, using behavioral and electrophysiological approaches. The open field task (OFT) was used to assess the effects of these drugs on motor behavior, and electroencephalography (EEG) was used to analyze the changes in brain activity after drug administration. Mice injected with any of the three drugs above had significantly reduced activity in the OFT, displaying decreased distance traveled, lower average speed and higher time immobile compared to controls. Mice also showed a significant increase in power of slow wave activity, with no change in other waveforms. The effects observed were dose dependent, with greater effects at higher doses. These results reveal that drug binding of TSPO produces a sedative-hypnotic effect that is associated with increases in slow wave activity, which implicates a possible interaction with inhibitory circuitry.

36. EEG Correlates of the Head Twitch Response Induced by 5-HT_{2A} Receptor Agonist 25I-NBOH

April Contreras, M. Khumnark, R.M. Hines, D.J. Hines | Psychology

Serotonin (5-HT) is an evolutionarily conserved neuromodulator known to stabilize mood. Of the 5-HT receptor subtypes, the 5-HT_{2A}R is expressed in multiple brain areas, and highly enriched in the frontal cortex. 5-HT_{2A}Rs also appear to be central to the mechanism of action for classical hallucinogens, which are receiving renewed attention as potent and long lasting psychiatric therapies. In rodents, the head twitch response (HTR) serves as a read-out for 5-HT_{2A}R activation and hallucinogenic effects, yet less is known about the circuit level changes induced by hallucinogen action on 5-HT_{2A}Rs. To better understand these changes, we used a combination of behavioral assays and electroencephalography (EEG) to characterize the HTR in mice after administration of the potent and highly selective 5-HT_{2A}R agonist 25I-NBOH. Mice injected with 25I-NBOH exhibited a robust HTR and a disorganization of behavior. Animals displayed the HTR as early as 3 minutes after drug administration, which confirms findings from previous studies characterizing the HTR using other 5-HT_{2A}R agonists. We then performed a series of EEG studies to understand the patterns of activity that underlie the HTR. We found that a characteristic pattern composed of two distinctive waveforms (Phase I and Phase II) occurred after injection of 25I-NBOH. This pattern also correlates temporally with the HTR, with Phase I most commonly preceding the HTR and Phase II mapping directly onto the HTR. Our findings contribute to our understanding of 5-HT_{2A}R actions, with major implications for clarifying the role of serotonergic signaling in the cortex for novel therapies.

37. A spoonful of sugar helps theta-gamma coupling go down

Lauren Crew, Adam McNeela, Ryan A. Wirt, Andrew A. Ortiz, Hugo Peredo, Stephanie Hernandez, Jefferson W. Kinney, James M. Hyman | Psychology

Working memory impairments are among the many debilitating symptoms of Alzheimer's disease (AD). Working memory is supported by synchronization of theta and gamma frequencies in the anterior cingulate cortex (ACC) and hippocampus (HC). Although the etiology of sporadic AD is unknown, several risk factors have been identified, including diabetes mellitus (DM). Chronic neuroinflammation is a pathological symptom of both DM and AD, and it is possible that neuroinflammation itself impacts cognitive performance. Given the links between DM and AD, examining the ACC and HC cross-frequency synchronization in a diabetic rodent model could help elucidate the neural processes underlying AD-related working memory impairments. We hypothesize that neuroinflammation disrupts network oscillatory activity within the ACC and HC, as well as the interactions between these areas. To test this, we trained rats to perform a delayed alternation task, which is dependent upon interactions between ACC and HC. Following training, we induced chronic hyperglycemia by injecting experimental animals with multiple low doses of streptozotocin. We found delay dependent spatial working memory impairments in hyperglycemic animals compared to healthy controls. Electrophysiological data revealed decoupling between the theta (5-12 Hz) and gamma (30-50 Hz) bands within both areas. We also found disruptions in theta coherence, increased theta band oscillations, and decreased delta (1-3 Hz) band oscillations in the ACC and HC in the hyperglycemic group. Together, these results suggest that the hyperglycemia-driven neuroinflammatory state that is associated with the physiological and cognitive pathologies of AD, also induces alterations in ACC and HC oscillatory activity and interactions.

**Social Science Poster Session D –
Ballroom**



PRESENTATIONS:

8:45 – 9:00 AM	#38 Sheen Kachen, Business Administration
9:00 - 9:15 AM	#39 Sinyong Choi, Criminal Justice
9:15 - 9:30 AM	#40 Deena Devore, Criminal Justice
9:30 - 9:45 AM	#41 Tanya Dudinskaya, Criminal Justice
9:45 - 10:00 AM	#42 Chris Forepaugh, Criminal Justice
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#43 Heather Gilmore, Criminal Justice
10:45 - 11:00 AM	#44 Tereza Trejbalova, Criminal Justice
11:00 - 11:15 AM	#45 Brandon Rusk, Business Administration
11:15 - 11:30 AM	#46 Alexa Bejinariu, Criminal Justice
11:30 - 11:45 AM	#47 Samantha Thies, Communication Studies

38. Evaluating Outcomes of Inclusionary Zoning Policies on Populations of Homeless Individuals in the United States by Continuum of Care

Sheen Kachen | Business Administration

There are few existing resources and well-established methods with which to evaluate the impact of state policies and legislation on homelessness in regional communities in the field of human services. As such, it is increasingly important to find and create resources and strategies to measure the outcomes of policies and legislation combating homelessness in communities across the United States. Improving measures of policy provision in homeless services would allow policy makers and service providers to better equip themselves to create policy and provide service for diverse regional communities. Specifically, this paper is interested in studying the effect of affordable housing policies on different geographic populations across the United States. This paper will do so by comparing measurements of the overall and unsheltered homeless populations in regions with affordable housing policies against regions without, using data from the Department of Housing and Urban Development's (HUD) annual Point-in-Time (PIT) count in comparison with the Inclusionary Zoning Database. Many regions in the country have a significant affordable housing shortage, made worse by preventive protest against the implementation of affordable housing measures by real estate and housing lobbyists, despite a growing body of research suggesting the alleviative effect of affordable housing policies on homeless populations. It is important to study the effect of inclusionary zoning policies on homelessness among different geographic populations in other regions with inclusionary housing policies in order to further prove the efficacy and necessity of such policies.

39. Emotional Literacy Programs in Prison Systems: A Random Effects Meta-Analysis of Studies on Empathy, Mindfulness, and Self-regulation

Sinyong Choi | Criminal Justice

Identifying promising correctional programs has long challenged correctional administrators, policymakers, and researchers (Gendreau, French, & Gionet, 2004; Rhine, Mawhorr, & Parks, 2006). Despite numerous studies demonstrating a need for effective correctional programs, few studies have been conducted to explore the potential of Emotional Literacy programs for correctional populations. Emotional Literacy programs are becoming less uncommon across correctional settings, (Fleischer, 2010; Knight & Modi, 2014). Through a meta-analysis, the current study examines outcome of the findings from a sample of Emotional Literacy correctional programs. Data from programs in the U.S., Germany, and Portugal were analyzed to identify the most efficient model of Emotional Literacy programs for incarcerated persons. Results suggest that the more effective Emotional Literacy programs emphasize self-regulation, mindfulness, and empathy components common to EL programs. Policy implications are discussed.

Keywords: Emotional Literacy, Emotional Literacy programs, Empathy, Mindfulness, Self-regulation, Prisons, Delinquency

40. Gender Disparities in Perceptions of Illegal Teacher Student Encounters

Deena Devore | Criminal Justice

News stories of teachers arrested for sexual relationships with students have varying public reactions. Male teachers arrested for a sex offense are met with public comments of disgust, death threats, threats of violence, and are overall negative. Female teachers – particularly conventionally attractive teachers – arrested for a sex offense are met with mixed public comments. While some comments are negative, a sizable portion claim that the student was lucky, condemn whoever reported the relationship, and express desires to have had teachers like the offender when they were a student. Regardless of a state's age of consent, teachers are in a position of authority and therefore cannot legally have relationships with students. Therefore, perceptions of guilt on the basis of gender can prevent equal treatment of offenders. The current study aims to analyze public perceptions of teacher-student sex offenders and gender disparities through a preliminary content analysis of various social media outlets and news sources. Establishing disparities in perceptions is the first step in addressing disparities in the administration of justice.

41. Help! (I need somebody): Impact of Body-Worn Cameras on Reporting on Assaults in Crowds

Tanya Dudinskaya, Miliikeala SJ. Heen, Joel D. Lieberman | Criminal Justice

Police departments have had widespread adoption of body-worn cameras in recent years, and other security entities may soon follow this trend. More recently, increased attention has been paid to the potential uses of body-worn cameras by private security, at events such as festivals or music concerts. This has raised questions regarding privacy concerns of witnesses or victims of crimes. Further, BWCs may have an impact of the reporting behaviors of victims of assaults in crowds. The current study examines public opinion on the usage of body-worn cameras for crowd monitoring activities, tradeoffs between privacy and safety, and more. Policy implications, including strategies to increase victim reporting at such events, are discussed.

42. Implicit Bias and Use of Force Decision Making

Chris Forepaugh | Criminal Justice

A number of recent controversial incidents involving police use of force have led to concerns that police may be more likely to use force against certain social groups. In particular, controversial officer-involved shootings involving Caucasian officers and African American suspects/victims have fueled concerns that African Americans may be subject to greater use of police force. This poster synthesizes the existing literature concerning both macro-level and micro-level investigations into the police use of force. This poster first summarizes what is known about police use of force within the United States, including the relative frequency of force as well as which racial groups appear more likely to be subjected to deadly force. The poster then summarizes the two general methods used to study implicit bias in the application of deadly force. Computer-based use of force studies (i.e., studies where participants press corresponding buttons on a keyboard to indicate whether deadly force would be used) generally find evidence of implicit bias against African Americans, whereas high-fidelity simulation studies (i.e., studies where participants role-play as police officers and interact with virtual suspects) contradict the idea that African Americans are more likely to have deadly force used against them. This poster concludes by illuminating several gaps in the existing literature and sets the stage for a Master's thesis research project that attempts to address some of the gaps in the literature and to further the use of high-fidelity simulation research.

43. Gender Disparities in Perceptions of Teacher-Student Encounters

Heather Gilmore | Criminal Justice

News stories of teachers arrested for sexual relationships with students have varying public reactions. Male teachers arrested for a sex offense are met with public comments of disgust, death threats, threats of violence, and are overall negative. Female teachers – particularly conventionally attractive teachers – arrested for a sex offense are met with mixed public comments. While some comments are negative, a sizable portion claim that the student was lucky, condemn whoever reported the relationship, and express desires to have had teachers like the offender when they were a student. Regardless of a state's age of consent, teachers are in a position of authority and therefore cannot legally have relationships with students. Therefore, perceptions of guilt on the basis of gender can prevent equal treatment of offenders. The current study aims to analyze public perceptions of teacher-student sex offenders and gender disparities.

Keywords: School crime, sex crimes, victimization, gender disparities

**44. Being a Prison Chaplain in a Godless Country: An
Exploration of the Czech Correctional Chaplaincy**

Tereza Trejbalova, Dr. Andrea Belanova, Bridget Kelly
| Criminal Justice

Czech Republic, a post-communist country in East-Central Europe, is oftentimes presented as one of the most secularized countries in the world. Albeit constituting no more than 15% of population, members of Christian churches develop extensive activities in many spheres of public life. Chaplaincy is an example of ecumenical initiatives reinstated after the fall of the Iron Curtain in 1989. Prison chaplains have been gaining respect from both prisoners and prison staff in the past several decades, but their position and competencies within the correctional system are still being negotiated in this traditionally secular environment. The main objective of our study was to define the identity of a Czech prison chaplain within a total institution in a highly secularized country. Survey and interview data from a two-year project yielded the sample size of 55 individuals, and portrayed chaplains as being at the intersection of promoting personal relationship with faith in a dehumanized prison environment. Additionally, self-identity of female clergy and the prisoners' perceptions of their service emerge as topics of interest. Policy implications for the combination of pastoral and correctional care are considered.

**45. An Exploration of the Concept of American
Exceptionalism: Its Origins and Limitations**

Brandon Rusk | Business Administration

Abstract:

American Exceptionalism is a phrase that is often used uncritically to refer to the uniqueness and superiority that is the United States. Determining the extent of what constitutes American Exceptionalism has been a topic of debate since its introduction. It is this debate that must be understood in order to determine whether the United States is a world model in terms of stability. In order to investigate this effect, I will first determine the extent to which the United States is considered exceptional. I will then create a quantifiable measure based on the characteristics that contribute to the concept of American Exceptionalism. Using this measure, I will compare the twenty independent countries that make up Central and Latin America with the United States and calculate whether these nations will develop stable democracies over time.

Objectives:

Can a nation become stable if it were to mirror the characteristics that make the United States exceptional? To address this question, I will:

- Determine the extent to which the United States democracy may be considered exceptional and stable based on its political, social and economic foundations.
- Quantify the characteristics that make the United States exceptional and compare these characteristics with all twenty independent Latin and Central American nations.
- Analyze whether the qualities that make the United States exceptional are enough to determine the stability of nations within Latin and Central America.

46. Slipping Through the Cracks: Assessing the Role of Child Protective Services in the Commercial Sexual Exploitation of Youth

Alexa Bejinariu, Kevin Hoover, M. Alexis Kennedy, Andrea N. Cimino | Criminal Justice

The current study seeks to better understand the experiences of commercially sexually exploited (CSE) youth, especially as they refer to their interaction with the juvenile justice system and child protective services. A total of 96 participants were recruited for this study, with participants having to complete an online survey questionnaire. Survivors were asked questions regarding their trafficking experiences, intentions to quit, mental and physical health, as well as probed on their interaction with social service agencies. Results indicate that involvement with the child protective services and juvenile justice system is common among CSE victims. Implications for future research directions, policy, and strategies for preventing CSE are also discussed.

Keywords: *domestic minor sex trafficking, commercial sexual exploitation of children, child protective services, child welfare services, juvenile justice system*

47. Regulating Sex: Examining Social Perceptions and Legal Management of Sex Work in Nevada

Samantha Thies | Communication Studies

Sex work, although legal in certain parts of Nevada, is still influenced by illegality. This essay explores the contradictions surrounding regulating sex work and sex trafficking in Nevada. In this paper I argue that, despite its regulated state today, laws regarding sex work in Nevada create paradoxical conditions where sex workers subjectivities are both protected and disciplined by the law. This disciplining enforces a state-operated and gendered control over the bodies of sex workers, making their work riskier and furthering their social stigmatization in spite of the state having comparatively progressive laws regarding sex work.

**Science Poster Session A –
Ballroom**



PRESENTATIONS:

8:45 – 9:00 AM	#48 Victoria Amato, Life Sciences
9:00 - 9:15 AM	#49 Santiago Bataller, Life Sciences
9:15 - 9:30 AM	#50 Adrienne Bugayong, Life Sciences
9:30 - 9:45 AM	#51 Jennifer Clark, Life Sciences
9:45 - 10:00 AM	#52 Dylan Guerin, Life Sciences
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#53 Dengxun Lai, Life Sciences
10:45 - 11:00 AM	#54 Nicholas Nelson, Life Sciences
11:00 - 11:15 AM	#55 NT Vivian Sam, Life Sciences
11:15 - 11:30 AM	#56 Jillian Socea, Life Sciences
11:30 - 11:45 AM	#57 Anne Villacastin, Life Sciences
11:45 – 12:00 PM	#58 Tamara Wynne, Life Sciences

48. Identification and Transcription Profiling of the NHL (NDR1/HIN1-like) Gene Family in Rice

Victoria Amato, Liyaun Zhang, Linkun Gu, Qingxi Jeffery Shen | Life Sciences

The functions of *NHL* (*NDR1/HIN1-like*) genes in plant responses to biotic stress and abiotic stresses have been reported. Although the NHL family have been well-studied in *Arabidopsis*, little is known about NHLs in rice. In this study, we have identified 103 *OsNHL* genes and determined conserved domains in the predicted *OsNHL* proteins. These *OsNHL* members were classified into six groups, based on the presence or absence of the three key protein motifs. To understand the relationship of *OsNHL*s to each other, the conserved domains, chromosomal distribution, phylogenetic relationships, and gene structure of these protein-coding genes were analyzed in detail. The transcription profile of *OsNHL* genes in various tissues, organs, and developmental stages were further analyzed to obtain information of the functions of these genes. In addition, five *OsNHL* genes displayed differential expression in aleurone cells treated with abscisic acid (ABA) and gibberellin (GA). Together, this work has provided foundation to the characterization and further functional studies of *OsNHL* family in rice.

49. WRKY71 transcription factor mediates the crosstalk of abscisic acid and gibberellin signaling in rice

Santiago Bataller | Life Sciences

Abscisic acid (ABA) and gibberellins (GAs) are phytohormones widely recognized to play mostly antagonistic roles in controlling several plant developmental processes including seed development, dormancy, and germination. Our previous studies via particle bombardment-mediated transient expression indicate that WRKY71 transcription factor functions as a negative regulator of GA signaling in aleurone cells. Herein, we present genetic evidence to show that WRKY71 mutant rice lines have higher α -amylase activities in aleurone cells compared to wild-type. Exogenous GA3 treatments induced over 10 times more α -amylase activity in the mutants compared to wild-type. In contrast, inhibition of exogenous ABA treatments on GA-induced α -amylase activity was 3 times more in the mutants compared to the wildtype. Quantitative RT-PCR analyses revealed the α -amylase genes whose responses to GA and GA plus ABA are altered in the mutants. Together, these data suggest that the mutants are hypersensitive to GA induction but hyposensitive to ABA repression of GA induction in terms of α -amylase gene expression. RNA-seq was carried out to address the molecular foundation of the hypersensitivity to GA induction and hyposensitivity to ABA repression and reveal the direct and indirect targets of WRKY71. Overall, our data firmly established that WRKY71 is a negative regulator of GA signaling in aleurone cells. Moreover, it mediates the crosstalk of GA and ABA signaling by targeting key GA and ABA signaling pathways and regulating the expression of hundreds of genes.

50. Tubby Regulates Estrogen Related Receptor Beta (Esrr β)

Adrienne Bugayong, Peipei Pan, Lorena P. Samentar, Arnold Salazar, Durin Uddin, Josue Portillo, Nora B. Caberoy | Life Sciences

A spontaneous mutation in tubby gene causes blindness, hearing loss, and obesity in mice. A combination of these phenotype is seen in rare human syndromes with unknown mechanisms. Thus, the overall goal of this study is to elucidate the role of tubby in the development of these disease phenotypes. Tubby has extra- and intracellular functions, but these do not fully explain how a single mutation in the gene led to three diseases. Thus, this study aims to define the molecular pathways involving tubby by identifying its interacting proteins and the genes that it regulates. Here, we identified Estrogen Related Receptor Beta (Esrr β) as one of the proteins that interact with tubby *in vitro* and *in vivo*. Tubby and Esrr β both colocalize in the retina. We also demonstrated that Esrr β is a gene regulated by tubby. Esrr β expression is decreased in tubby mutant mice in both mRNA and protein levels. Further analysis showed that tubby binds to the promoter of Esrr β through the estrogen-related receptor response element (ERRE) and activates transcription of Esrr β . In addition, we also show that tubby translocates into the nucleus and associates with the basal transcription machinery. These findings indicate that tubby is a transcription factor that regulates expression of Esrr β . Esrr β is associated with retinal degeneration, hearing loss, and obesity which are similar to tubby mutant phenotypes. Our findings provide a novel mechanistic insight on how tubby maintains healthy vision, and hearing, and proper energy balance through Esrr β induction.

51. The Role of Hormone Signaling in Extended Larval Development and Obesity in Starvation-Selected *D. melanogaster*

Jennifer Clark | Life Sciences

The Gibbs lab has generated a population of heterogeneous, outbred, starvation-selected flies that exhibit extended larval development (25% longer) and obesity (3x triglycerides stored) in addition to extreme starvation resistance (3x longer). The fruit fly, *Drosophila melanogaster*, has been established as a viable model in which to study obesity and metabolic disease as flies become obese under caloric overload, contain similar tissues, organs, and systems that are affected by obesity, and the genes involved are likely conserved in humans as nearly three-quarters of all human disease genes are conserved in *Drosophila*. In the United States, 2 in 3 adults are overweight or obese, with obesity-associated health care expenses costing an estimated \$190 billion annually. Research on the physiology of *Drosophila* obesity, hormone signaling, and nutrition sensing will inform research on the current human obesity epidemic.

Larval development time is controlled by larval nutrition and hormone signaling which contribute to adult starvation resistance by affecting body size and nutrient stores. Therefore, we hypothesized that allele combinations selected for during starvation selection have altered larval development and nutrient storage by affecting nutrition signaling and hormone signaling to change the length of the developmental period. I have characterized the larval development profile and manipulated hormones and nutritional status to affect the development of these flies to determine how starvation-resistance and the related phenotypes are modulated by changes to nutrition sensing or hormone signaling.

52. Assessing the Role of Notch Signaling During Vertebrate Eye Regrowth

Dylan Guerin | Life Science

Regeneration is the ability of an organism to regrow lost organs and tissues to a state that is both structurally and functionally similar to the lost tissues. This ability varies among even closely related organisms and the reasons remain unknown. In the Tseng lab, we are interested in identifying and studying the mechanisms that induce regeneration. The Notch1 gene is involved in normal eye development but also plays a key role in maintaining neural stem cells. Using the clawed frog *Xenopus laevis* as a model, I seek to assess the role of the Notch signaling pathway in eye regrowth. By knocking down Notch signaling during eye regrowth I have determined that the Notch signaling pathway is required for regrowth of the eye. This project will help to define how a developmental mechanism can be used to induce successful regrowth.

53. Taxonomy and metabolisms of the uncultured thermophiles "Aigarchaeota"

Dengxun Lai | Life Science

Aigarchaeota, a sister group to Thaumarchaeota, has been found in almost every thermal environment, such as hot springs, marine hydrothermal vents, and deep subsurface thermal environments. However, the difficulty of cultivating this group limits the study of its diversity, physiology, and ecological functions. In our study, we employ the use of advanced cultivation-independent approaches to investigate this group. Specifically, we analyzed high-quality Aigarchaeota genomes retrieved from different environments, including Great Boiling Spring (Nevada) and Brothers Volcano (Pacific Ocean), and compared them to Aigarchaeota metagenome-assembled genomes (MAGs) and single-amplified genomes (SAGs) from IMG and NCBI databases. Our results show that Aigarchaeota comprise at least 20 species-level groups, based on average nucleotide identity, and at least 10 genus-level groups and 3 family-level groups, based on marker-gene phylogenies and average amino acid. Phylogenetic analysis based on concatenated set of 122 conserved marker genes and 56 universal concatenated marker genes extracted from genomes were largely consistent. 23 high- and medium-quality genomes representing each genus of "Aigarchaeota" were used for additional analyses. Clustering based on gene content supported the proposed taxonomic structure and indicated shared functionality between genera and families. They are predicted to have broad respiratory capacity, including transformations of carbon, nitrogen, and sulfur.

54. A Functional Analysis of 20E-Stimulated Glue Secretion in the *Drosophila* Larval Salivary Gland

Nicholas Nelson | Life Science

A single steroid hormone, 20-hydroxecdysone (20E), triggers a plethora of tissue-specific responses in the common fruit fly, *Drosophila melanogaster*, during metamorphosis. As an example, the larval salivary gland responds to a large pulse of 20E to secrete a massive cargo of stored glycoproteins called glue. Because the gland is amenable to *ex vivo*-organ culture and genetic manipulations, it is an excellent model for studying how developmental and physiological signals regulate the function of exocrine tissues. Our lab has tagged the secreted glue molecules with fluorescent chromophores, and we are using salivary-gland specific *Gal4-drivers* and *UAS-responding RNAi* transgenes to systematically study the role of candidate genes using live-imaging techniques. Toward the end of elucidating a fundamental understanding of this process, we will describe how 20E stimulates a regulatory cascade—through its receptor and downstream transcription factors—to impact the activity of Rab GTPases and the remodeling of cytoskeletal elements. These changes further affect granule maturation and transport as well as the targeting, dumping, and releasing of those cargoes. Because humans and flies often use the same signaling molecules and pathways in their tissue-specific responses to steroids, this study is expected to elucidate fundamental exocrine activities that explain how these specialized tissues can secrete cargoes into a limited luminal space against a strong pressure gradient.

55. Effects of wildfire on plant and pollinator community relations in the Mojave Desert

NT Vivian Sam | Life Science

Since the 1980's and 1990's, the Mojave Desert has encountered an increase in fire extent not evident in presettlement historical records. While knowledge of post-fire responses of desert vegetation in western North American deserts has been accumulating, less is known regarding the responses of insect pollinator communities and whether fires change plant-pollinator relationships. Pollinator health is of global interest for not only food production for humans, but also for biodiversity conservation as pollinators play an important role in facilitating pollination and sexual reproduction in flowering plants. My study aims to answer the questions (1) Do richness and abundances of potential pollinator communities vary between burned and unburned communities of the Mojave Desert? (2) Are potential pollinator communities associated with different vegetation structures in burned and unburned communities? Potential pollinator communities are assessed through observations and collections in and around Red Rock Canyon National Conservation Area in the flowering seasons of 2019 and 2020. A greater understanding of how pollinator communities are affected by changing fire regimes in the Mojave Desert will better allow land managers to make decisions in restoring disturbed lands that take into consideration pollinator functions in relationship to specific plant communities and characteristics.

56. Uncovering the subcellular localization of VirB, a key transcriptional regulator of virulence genes in *Shigella flexneri*

Jillian Socea, Grant R. Bowman, Helen J. Wing | Life Science

Shigella species are the leading cause of diarrheal diseases, the second leading cause of child mortality worldwide, and are ever-increasing in resistance to antibiotics. One key feature of *Shigella* is a protein called VirB, a transcriptional regulator of virulence genes, which is required for disease. VirB is not related to other transcriptional regulators, instead its closest homolog is a plasmid-partitioning protein known as ParB. Importantly, ParB displays a subcellular localization in bacterial cells that is essential for its function. While all evidence suggests VirB and ParB have evolved to serve different functions in *Shigella*, we hypothesize that some common activities remain. Our overall goal is to understand the mechanism by which VirB regulation occurs with an aim to identify novel antibiotic targets. Here, we investigate the subcellular localization of VirB by constructing a GFP-VirB fusion protein. Interestingly, GFP-VirB forms discrete foci in the presence of the large virulence plasmid when viewed in live *S. flexneri* cells using phase-contrast and fluorescence microscopy. However, fewer foci are observed in the absence of virulence plasmid DNA. Moreover, when amino acid substitutions are made in GFP-VirB, such that it can no longer interact with DNA, a large majority of cells display diffuse fluorescent signal. Combined, these data demonstrate that the DNA sequences present on the large virulence plasmid and the DNA-binding activity of VirB are both needed for localization of the VirB protein. This work will provide a better understanding of the function of VirB in the context of *Shigella* pathogenesis.

57. Evolution of WRKY Transcription Factors Across *Oryza* Species

Anne Villacastin | Life Science

The WRKY family of transcription factors is a prominent group of transcriptional regulators in plants that play diverse roles in stress responses, growth, and development. *WRKY* genes are widely spread throughout the plant kingdom, and their presence in large numbers per species hints at its significant participation during the course of plant evolution. To study how the WRKY family has diversified, we examined its evolution within closely related lineages that have been actively selected for and with members adapted to broad biogeographic ranges under various selection pressures. The *Oryza* genus is an ideal model due to its long history of domestication, globally recognized economic importance, and central role as the model system for monocots. Putative WRKY proteins were identified through screening of 11 *Oryza* genomes against a Hidden Markov model constructed from previously identified *Oryza sativa* WRKY proteins. The WRKYs were found to be heavily concentrated in chromosomes 1 and 5. High sequence conservation was observed with most having single copies of WRKYGQK or WRKYGKK amino acid motif in the N-terminal and a Cys-Cys-His-His zinc-finger like binding pocket in the C-terminal. Phylogenetic analyses reveal ~76% of the orthologous WRKY proteins are under different amounts of selective pressures, which depend on the types of WRKY domains and the evolution rate of each species. These results provide invaluable insight into the diversification of an important gene family under strong selective pressure as well as useful information for the biotechnological improvement of the developing world's most valued food crop.

58. Native Plants' Response to Solar Facility Disturbance and Changes in Precipitation

Tamara Wynne, Dale Devitt | Life Science

Native plants respond to climate change and the disturbance of solar facilities by changing their physiology. The long term effects of these changes are unknown and continue to be monitored. We have three field sites measuring the responses of native plants to these occurrences. The first field site is the overhead sprinkler plot, where sprinklers add irrigation on plots after it rains (+200%, +100%, 0, -25% precipitation). The second site, the basin experiment, gets -25%, +50%, +100%, and +200% average annual rainfall divided between February and August. The importance of the research in these two plots mimics changes from increasing rain with global climate change. In the overhead sprinkler experiment, we hypothesize the water use efficiency of native plants differs depending on the amount of water given. The hypothesis in the basin experiment is that the irrigation treatment affects the stress and growth partitioning of the plant throughout the year. Stress of the plant is determined by monitoring transpiration and leaf temperature.

Lastly, we study a solar facility in Pahrump, NV where crews built the panels on ungraded land, leaving native plants next to the panels. The solar facility experiment hypotheses are that native plants inside the facility are more productive compared to native plants outside the facility due to panel heating, water, and shade. The production of the plant can be measured with growth, temperature, photosynthesis, and stomatal conductance. The preliminary results show greener leaves and more growth on the plants in the facility. Measurements are ongoing.

Science Poster Session B – Ballroom



PRESENTATIONS:

9:15 - 9:30 AM	#59 Jeffrey Belding, Mathematical Sciences
9:30 - 9:45 AM	#60 Jorge Reyes, Mathematical Sciences
9:45 - 10:00 AM	#61 Randy Sterbentz, Physics and Astronomy
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#62, Lina Chato, Electrical and Computer Engineering
10:45 - 11:00 AM	#63 Binayak Tiwari, Electrical and Computer Engineering
11:00 - 11:15 AM	#64 Monia Kazemeini, Mechanical Engineering
11:15 - 11:30 AM	#65 Jeff Stewart, Mechanical Engineering
11:30 - 11:45 AM	#66 Shekar Singh, Computer Science
11:45 – 12:00 PM	#67 Matthew Ginovsky, Theatre Arts

59. Computational Study of the Time Relaxation Model with High Order Deconvolution Operator

Jeffrey Belding | Mathematical Sciences

This paper presents a computational investigation for a time relaxation regularization of Navier-Stokes equations known as Time Relaxation Model, TRM, and its corresponding sensitivity equations. The model generates a regularization based on both filtering and deconvolution. We discretize the equations of TRM and the corresponding sensitivity equations using finite element in space and Crank-Nicolson in time. The shear layer roll-up benchmark is used to computationally test the performance of TRM across different orders of deconvolution operator as well as the sensitivity of the model with respect to the variation of time relaxation parameter in those cases.

60. A Generalization of the Smagorinsky Model

Jorge Reyes | Mathematical Sciences

Direct computation in numerical simulations of turbulent flow are often unfeasible. Large Eddy Simulations (LES) have been shown to provide efficient alternative. The Smagorinsky Model was first proposed in 1963. The Smagorinsky Model is still popular today with variations on the model being the workhorse of LES in industrial flows. The variants are needed since it has long been known that the Smagorinsky model is too dissipative. We analyze a generalization of the Smagorinsky model that attempts to fix the over dissipation. The Navier Stokes Equation, Smagorinsky, and Generalized Smagorinsky Models are then compared using several benchmark problems. Several meshes will also be used ranging from very coarse to fine to illustrate the effectiveness of such models.

61. Towards Raman mapping of correlated phenomena in magic angle twisted bilayer graphene

Randy Sterbentz, Kristine Haley, Ashkan Salamat, Joshua O. Island | Physics and Astronomy

The recent discovery of superconductivity in precisely tuned twisted bilayer graphene (tBLG) has prompted a flurry of research harnessing the twist degree of freedom in stacked layered materials. At the ‘magic angle’ of 1.1 degrees, the electronic band structure of tBLG becomes extremely flat leading to strong electron-electron interactions and correlated phenomena. We aim to observe electronic features in the Raman spectra of magic angle tBLG arising from non-resonant electron hole pair excitations between the flat bands. Raman spectroscopy is not only a powerful tool for determining the twist angle between two graphene layers but also a local probe allowing us to map out the homogeneity of the twist angle over the entire crystal. We corroborate our results with previous studies on interlayer interactions in chemical vapor deposited graphene bilayers at large twist angles. Our results will test leading theories on the electronic properties of tBLG and cement the use of Raman spectroscopy in the study of correlated phenomena in stacked materials with twisted structures.

62. 3D Deep Learning Models to Segment a Glioma Brain Tumor using MRI Images

Lina Chato | Electrical and Computer Engineering

A Glioma represents those tumors arising from the gluey or supportive tissue of the brain. This type of tumor is thought to be the most aggressive type of brain tumor, and overall survival time does not exceed two years. The Magnetic Resonance Imaging (MRI) is considered as the most confident way to diagnose and identify the size and location of glioma brain tumor. The objective of my dissertation research is to develop an accurate prediction model to predict the overall survival time for Glioma brain tumor patients based on MRI images. An accurate prediction model can provide a better understanding of a brain tumor behavior, as it is still unclear, which can help through a treatment stage. In this poster, 3-dimension (3D) glioma brain tumor segmentation models have been studied and designed to extract 3D deep features to train a prediction model for the overall survival time prediction system. Since MRI images are 3D images (multi slices), It is expected to improve the performance of a prediction model when the 3D deep features will be used because they can provide global and local voxel features instead of combining 2D features from each slice which was proposed and developed in 2017 and 2018. Different 3D segmentation models were used such as Unet, and Vnet to come up with a best segmentation model. Also, a new 3D deep learning structure named “Wnet” was proposed and examined to improve segmentation results.

63. Efficient On-Chip Multicast Routing based on Dynamic Partition Merging

Binayak Tiwari | Electrical and Computer Engineering

Networks-on-chips (NoCs) have become the mainstream communication infrastructure for chip multiprocessors (CMPs) and many-core systems. The commonly used parallel applications and emerging machine learning-based applications involve a significant amount of collective communication patterns. In CMP applications, multicast is widely used in multithreaded programs and protocols for barrier/clock synchronization and cache coherence. Multicast routing plays an important role on the system performance of a CMP. Existing partition-based multicast routing algorithms all use static destination set partition strategy which lacks the global view of path optimization. In this paper, we propose an efficient Dynamic Partition Merging (DPM) based multicast routing algorithm. The proposed algorithm divides the multicast destination set into partitions dynamically by comparing the routing cost of different partition merging options and selecting the merged partitions with lower cost. The simulation results of synthetic traffic and PARSEC benchmark applications confirm that the proposed algorithm outperforms the existing path-based routing algorithms. The proposed algorithm is able to improve up to 23% in average packet latency and 14% in power consumption against the existing multipath routing algorithm when tested in PARSEC benchmark workloads.

64. Remote Sensing of Radiological Materials in a Wide Area using Unmanned Aerial Systems

Monia Kazemeini | Mechanical Engineering

Gamma ray and neutron measurements are important at nuclear facilities. To enable remote sensing, robotic platforms are used to carry the radiation detectors. In a radiation environment, robots will be exposed to high doses which limits the platform's operational time. Electronic components are affected the most and must be shielded. The tradeoff between shielding and capabilities of the robot can be made to achieve specific tasks during a required time period. The PhantomX hexapod was studied as a platform for the use of a CZT detector and a video camera in neutron and gamma fluxes. The stochastic radiation transport code FLUKA was used to calculate damage rates in electronic components of the system. The compact packaging of these components and the shielding design were determined to reduce radiation damage under dose conditions while keeping the optimal payload.

65. Gen-Foam Model Of Graphite Moderator Of A Molten Salt Reactor

Jeff Stewart, Alexander Barzilov | Mechanical Engineering

In thermal neutron spectrum molten salt reactors (MSR), a graphite moderator contributes a positive reactivity value to the overall temperature reactivity coefficient of the core. When irradiated in the core, graphite undergoes dimensional changes which are a function of the neutron spectrum. The graphite lifespan is a limiting parameter in MSR designs; it correlates strongly with the graphite's dimensional changes. Multiphysics modeling is required to evaluate the graphite thermal and mechanical responses to the MSR core conditions. To predict graphite dimensional changes associated with irradiation, a computational model was developed using GeN-FOAM. In particular, the thermo-mechanical region solver was expanded to account for the moderator's response to the core's neutron kinetics. These capabilities enable modeling of the thermal deformation of graphite moderator structures as well as calculation of the moderator temperature at the thermo-mechanical mesh cell level. The GeN-FOAM graphite moderator model was benchmarked using the experimental and computational data of graphite moderator thermal response in high temperature gas-cooled reactors.

KEYWORDS

Molten salt reactor, graphite moderator, multiphysics, GeN-FOAM

66. Facial Expression Recognition Using Convolutional Neural Networks

Shekar Singh | Computer Science

Emotions are a powerful tool in communication and one way that humans show their emotions is through their facial expressions. One of the challenging and powerful tasks in social communications is facial expression recognition, as in non-verbal communication, facial expressions are key. In the field of Artificial Intelligence, Facial Expression Recognition (FER) is an active research area, with several recent studies using Convolutional Neural Networks (CNNs). In this paper, we demonstrate the classification of FER based on static images, using CNNs, without requiring any pre-processing or feature extraction tasks. The paper also illustrates techniques to improve future accuracy in this area by using pre-processing, which includes face detection and illumination correction. Feature extraction is used to extract the most prominent parts of the face, including the jaw, mouth, eyes, nose, and eyebrows. Furthermore, we also discuss the literature review and present our CNN architecture, and the challenges of using max-pooling and dropout, which eventually aided in better performance. We obtained a test accuracy of 61.7% on FER2013 in a seven-classes classification task compared to 75.2% in state-of-the-art classification.

67. USITT Conference & Stage Expo

Matthew Ginovsky | Theatre Arts

Stage automation is becoming more and more prominent in the entertainment industry. The USITT Conference and Stage Expo is an excellent place to see new products being unveiled by the industry leaders such as TAIT and Creative Conners. In addition to new technology, safety is always a continuing conversation in the industry.

**Science Poster Session C –
Ballroom**



PRESENTATIONS:

9:00 - 9:15 AM	#68 John Gonzales, Civil and Environmental Engineering and Construction
9:15 - 9:30 AM	#69 Ariful Hasnat, Civil and Environmental Engineering and Construction
9:30 - 9:45 AM	#70 Bright Huang, Civil and Environmental Engineering and Construction
9:45 - 10:00 AM	#71 George William Kajjumba, Civil and Environmental Engineering and Construction
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#72 Usha Poudel, Civil and Environmental Engineering and Construction
10:45 - 11:00 AM	#73 Yasamen Saedi, Civil and Environmental Engineering and Construction
11:00 - 11:15 AM	#74 Tahir Ali Shaikh, Civil and Environmental Engineering and Construction
11:15 - 11:30 AM	#75 Binita Shrestha, Civil and Environmental Engineering and Construction
11:30 - 11:45 AM	#76 Madya Fathi, Civil and Environmental Engineering and Construction

68. Bench-Scale Evaluation of Biological Reduction of Multi-Contaminants Enhanced by Zero Valent Iron (ZVI)

John Gonzales | Civil and Environmental Engineering and Construction

Zero valent iron (ZVI) has been used previously foster abiotic and biotic reductions of oxyanions - nitrate, chlorate, and perchlorate. ZVI creates a reducing environment through corrosion reaction by adding iron and water to produce electrons to produce hydrogen gas. In an abiotic reduction, ZVI chemically reacts with the oxyanion. In a biotic reduction, the hydrogen generated is used as an electron donor by bacteria to degrade contaminants. The objective of study is to evaluate the feasibility of ZVI to promote contaminant reduction and determine optimal dosages. Bench-scale tests were performed using zero valent iron (ZVI) only and ZVI coupled with carbon source and nutrients. Microcosms used different types of granular ZVI and varying ZVI to contaminant molar ratios. For the column tests, a transparent, polyvinyl chloride (PVC) columns were used and packed with ZVI like a permeable reactive barrier (PRB) and were operated upflow using a peristaltic pump. Water containing nitrate, chlorate, and perchlorate was used. Microcosms revealed that ZVI is effective in reducing nitrate and chlorate. Smaller ZVI provided a faster and higher nitrate and chlorate reduction. More than 100x molar ratio provided higher nitrate and chlorate removal rates. In abiotic microcosms, there was no observed perchlorate reduction. A column with ZVI only reduced nitrate within 5 days of operation; however, the column has shown limited chlorate reduction and no observed perchlorate reduction. The column with ZVI with carbon source and nutrients showed nitrate and chlorate reduction within 3 days, and perchlorate reduction within 10 days.

69. Development of cost effective Ultra-High-Performance Concrete

Ariful Hasnat | Civil and Environmental Engineering and Construction

In recent years, ultra-high-performance concrete (UHPC) has attracted interest from the research community because of its excellent physical, mechanical, and durability properties. However, due to very high production cost, its application in civil infrastructures has been thus far limited. In this context, an experimental investigation was conducted to produce lower cost UHPC utilizing locally available traditional fine aggregates. In order to obtain the maximum packing density and minimum matrix porosity, uniquely size graded manufactured fine aggregate was produced. Silica fume, industrial and natural pozzolans were used at different replacement levels of cement content. the findings of the study revealed that, at 28 days, more than 17500 compressive strength could be attained using locally available fine aggregates. Expensive quartz sand can be replaced with a locally available fine aggregate without compromising the required strength properties. Replacing a portion of Portland cement with fly ash and natural pozzolan seemed to be effective in achieving high compressive strength without any addition of silica fume. The incorporation of silica fume had a positive impact on the strength properties — however, the cost of concrete increases for the UHPCs containing silica fume. Natural pozzolan produced lowest drying shrinkage development amongst the studied UHPCs, whereas mortars containing silica fume yielded the highest drying shrinkage when compared to both natural and industrial pozzolan. The flexural capacity of UHPCs increased significantly when steel fiber is incorporated. Abrasion and Freeze-thaw resistance found to be considerably better than regular strength concrete.

70. Synthesis of Lithium Ion Imprinted Polymer

Bright Huang | Civil and Environmental Engineering and Construction

Since the rising trend of electric and hybrid cars, the demand for lithium battery production has a huge increased substantially in demand by the industry. As one of the Earth's rare elements, lithium's price has significantly increased in the past five years due to the demand. The limited reserve for lithium requires alternative lithium source to satisfy the growing demand. Recycling free lithium ion from the process of lithium battery manufacturing can be potentially profitable. One way to recycle free lithium ion is the application of lithium ion imprinted polymer. It can be prepared with Benzo-12-Crown-4 (B12C4), lithium chloride monohydrate(LiCl), acetonitrile, Ethylene glycol dimethacrylate(EGDMA), Methacrylic Acid(MAA), and Azobisisobutyronitrile(AIBN). Lithium ion imprinted polymers (LIPs) uses memory cavity as the main concept in collecting free lithium ions in the water. Memory cavity make these polymers highly selective by size and charge. Being selective can minimize the collection of other free ions in water. Memory cavity can also bring inconvenience for the polymer. The cavity can be filled by colloidal particles in water. To minimize the effect of colloidal particles, additional coating on the polymer is needed to mitigate colloidal particles from entering the cavity. To maximize the collection of free lithium ions, lithium ion imprinted polymer will be attached on to polyvinylidene difluoride(PVDF) membrane coated with dopamine to maximize collection. In this study, the research focus is on the methodology to make the lithium ion imprinted polymer.

71. Toxicity of Rare Earth Metals on Human Carcinoma (HepG2) Cell and Chinese Hamster Ovary Cell

George William Kajjumba, Matias Attene-Ramos, Erica J. Marti | Civil and Environmental Engineering and Construction

Rare earth elements (REEs) are prime contenders for the first full-scale implementation of phosphorus removal in wastewater treatment plants. However, this means increased exposure of humans to such metals like lanthanum and cerium. To address this concern, this study employed quantitative in vitro bioassays with human carcinoma (HepG2) and Chinese hamster ovary (CHO) cells to investigate lanthanides' toxicity. The mitochondria of HepG2 cells showed strong resistance to lanthanide exposure; no mitochondria potential was lost within 0.5-5.0 mM after 90 min of exposure. The half-maximal response (EC 50) values after 24 h of HepG2 exposure followed a trend of Lu > La >> Ce ~ Gd, while after 72 h of CHO exposure it was Ce ~ Lu > La ~ Gd. In both cases, gadolinium is the least toxic REE. The toxicity of lanthanides did not follow Harkin's rule of toxicity and all REEs showed cooperative binding. Lanthanide mixtures exhibited an additive effect on CHO cells while HepG2 cells showed an antagonist and/or additive effect. Comparing the EC 50 values of lanthanide mixtures for both cell titer blue® (CTB) (24 h test) and CHO chronic (72 h) assay, the values are in the same range. Lanthanides exhibited low mitochondria membrane potential disruption. Therefore, the applicability of REEs like cerium and lanthanum in water treatment can be considered as less harmful.

72. Hydrological Modeling to Study The Impact Impervious Surface on Walnut Gulch Experimental Watershed Hydrology

Usha Poudel | Civil and Environmental Engineering and Construction

Urbanization induce substantial impact on infiltration and surface roughness resulting in high flood volume and peak discharge. This study explored the linkage between spatial pattern of imperviousness on watershed and its hydrological response to precipitation. The spatial distribution of imperviousness is investigated by accounting for its location within the basin.

Distinct urbanization scenarios were developed for the study including i) impervious surfaces

(80%) located upslope; ii) impervious surfaces (80%) located downslope; iii) impervious surfaces (80%) at middle stream. Hydrologic Engineering Centre-Geospatial Hydrologic Modelling System (HEC-GeoHMS) and Hydrologic Engineering Centre-Hydrologic Modelling System (HEC-HMS) models were utilized to simulate the rainfall-runoff of the watershed and study the effect of different patterns of imperviousness by computing streamflow hydrographs from event precipitation data. Land use maps and hydrological soil group of the study area were used to obtain curve number and impervious percentages. Rainfall and river flow data from five meteorological stations were acquired from the United States Department of Agriculture (USDA) website. The calibration and validation of the model was implemented for the two precipitation event from the year 2012. The calibrated event model was then used to study the spatial distribution of impervious surface. The simulation results show that the hydrological response to urbanization is more pronounced in some of the sub-basins. The outcome of this study demonstrated the need for sustainable development by targeting the areas that has less impact on downstream flooding. In addition, these findings can help for development of better plans and policies for urbanization in conjunction with various low impact development strategies to minimize the flood risk.

73. Sorption and Elution Behavior of Slow Release Electron Donor Used to Support Biodegradation of Chlorate and Perchlorate analysis of Squat Mechanics Between Individuals With High and Low Strength Levels

Yasaman Saedi, Jacimaria Batista, Nicole Martin, Sichu Shrestha, John Gonzales, Ronnie Britto | Civil and Environmental Engineering and Construction

In the United States, perchlorate (ClO_4^-) contamination remediation is highly desirable because it impacts the drinking water of millions of people. In many contaminated areas, chlorate occurs as a co-contaminant together with perchlorate. Biological reduction is preferred when perchlorate concentrations are at the part per million level. Biological reduction requires the addition of a substrate to serve as electron donor. Emulsified vegetable oil has been used previously as a substrate to support in-situ bioremediation. It is important to understand how emulsified oil is eluted out of soils to estimate amounts and frequencies of applications. In this research, the sorption and elution of emulsified soil from actual soils of a site contaminated with chlorate and perchlorate are examined. In addition, batch bioremediation experiments are performed to determine the bioremediation potential of the site using actual soils and groundwater of the area. In all batch biodegradation tests using both sandy and clayey soils, chlorate and perchlorate degraded completely within twenty days.

Isotherm plots showed that the adsorption of oil obeys a Langmuir model. For sandy soils, the adsorption was found to have a coefficient $q_e\text{-max}=0.124$ g/g dry soil and 0.1045 g/g wet soil. For clayey soils, the adsorption also fit a Langmuir model with coefficient $q_e\text{-max}=0.239$ g/g dry soil and 0.184 g/g wet soil. On a wet soil basis, clayey soils can absorb 1.76 times more oil than sandy ones.

74. Understanding the Sensitivity of Curve Number on Hydrograph Attenuation

Tahir Ali Shaikh, Haroon Stephen, Sajjad Ahmad | Civil and Environmental Engineering and Construction

The development of urban areas is one of the key attributes of urban flooding. Las Vegas valley has undergone significant development, thus increasing frequency of urban flooding. In general, the intensity of urban floods is highly sensitive to the composition of urban surfaces. These surfaces are quantified using curve numbers in urban flood modeling. This study analyses the effects of change in curve number on discharge hydrograph. Hydrologic Engineering Center (HEC)-Hydrologic Management System (HEC-HMS) is used to understand the impacts on discharge hydrograph. It is noted that peak discharge occurs earlier due to increase in lag time as a result increase in curve numbers. Road networks act as water channels thus increase the velocity. Moreover, the total discharge volume for a given storm event is increased as result of decrease in surface permeability. The results are validated using observed data from the United States Geological Survey stream gauge data. This study is useful to observe the impacts of curve numbers on hydrology.

75. Impact of urbanization on the hydrology of Walnut Gulch Experimental Watershed

Binita Shrestha, Sajjad Ahmad, Haroon Stephen | Civil and Environmental Engineering and Construction

As the land once covered with trees, shrubs, and crops are replaced with concrete pavements, driveways, and buildings, it results in reduction of natural infiltration of rainwater. This accumulation of rain on surface gives rise to urban flood. This paper aims to simulate a prominent July rainfall event of 2008 in the Walnut Gulch Experimental Watershed to understand the effect of urbanization. The base hydrologic model is developed using Hydrologic Engineering System- Hydrologic Modeling System (HEC-HMS) and validated with observed hydrograph at the outlet (flume 001). The rainfall-runoff data are obtained from the United States Department of Agriculture (USDA) while land cover land use maps from the United States Geological Service (USGS) websites. The model is simulated for a configuration with hypothetical scenarios within the watershed. Future urbanization is created by manipulating the existing settlement in the watershed. The objective is to assess the changes in hydrological features such as runoff volume and peak discharge due to land cover changes. The obtained hydrograph demonstrates a significant increase in the discharge as well as runoff volume, which concludes a need of flood control measures in the watershed. This quantified impact of land cover changes on the hydrology of the watershed is useful while planning the future urbanization.

76. Need to decide one paper out of 2 accepted at the CRC 2020 in March.

Medya Fathi | Civil and Environmental Engineering and Construction

One of the most widely used alternative delivery methods in the United States is design-build (DB). There have been studies done to compare the performance of DB highway projects with water/wastewater and building projects. However, the performance of DB building projects, based on subcategory as commercial, apartment, residential, school, campus, or health care facilities, were not investigated. Moreover, in comparing apartment or residential building and other infrastructure projects, it should be noted that the owners of these two types of projects are different; one private and another public. While comparing the performance of DB commercial buildings and DB health care facilities, the effect of owner will be neutralized, as both are private investors with the main objective of return on investment. Therefore, this study collected 28 DB commercial buildings and 25 DB clinics and hospital buildings (health care facilities) cost and schedule data to determine whether these two types of projects funded by the private investors had significantly different cost- and schedule- related performance metrics, including cost growth, schedule growth, and construction intensity. In addition, the study also investigated whether these two types of projects were using similar types of contracts and procurement methods. The results showed that the cost and schedule performance of DB health care facilities and commercial buildings was not significantly different. It was also found that the dominant contract types and procurement methods used in these two types of DB projects were lump sum and best value, respectively.

**Science Poster Session D –
Ballroom**



PRESENTATIONS:

8:45 – 9:00 AM	#77 Kavita Batra, Environmental and Occupational Health
9:00 – 9:15 AM	#78 Philip Danquah, Environmental and Occupational Health
9:15 - 9:30 AM	#79 John Olawepo, Environmental and Occupational Health
9:30 - 9:45 AM	#80 Amalie Alver, Janelle Castellino, Sabrina Antonio, and Wynona Dizon, School of Medicine
9:45 - 10:00 AM	#81 Doris Chan, School of Medicine
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#82 Damien Medrano, School of Medicine
10:45 - 11:00 AM	#83 Carly Saxe, School of Dental Medicine
11:00 - 11:15 AM	#84 Ahreum Yoo, School of Dental Medicine
11:15 - 11:30 AM	#85 Joseph Brown, School of Dental Medicine
11:30 - 11:45 AM	#86 Angelica Jane Bustos, School of Dental Medicine

77. Babies Born Addicted: A Comprehensive Literature Review Investigating the Risk of Neonatal Abstinence Syndrome (NAS)

Kavita Batra, Guadalupe Mercad, Patricia Cruz | Environmental and Occupational Health

Maternal drug abuse is a well-established risk factor of Neonatal Abstinence Syndrome (NAS). NAS is a constellation of withdrawal symptoms among newborns due to intrauterine exposure to addictive substances such as opioids resulting in irritability, jitteriness, high-pitched crying, poor feeding, and sleeping disturbances after birth. While western countries, including the United States, Canada, and Australia, are being affected by high opioid use, collective evidence providing country-wise comparisons of NAS incidence is lacking. Moreover, the risk of NAS varies with the type of prenatal opioid agonists (methadone and buprenorphine) used among drug dependent mothers. The objectives of this review were to compare the NAS incidence across countries with high opioid use and to examine the risk estimates of NAS subsequent to prenatal opioid agonist pharmacotherapy. Library databases and scholarly and open access journals were searched for reports with NAS incidence and those providing risk estimates subsequent to drug-replacement treatments. A detailed content analysis was performed followed by data extraction. Of the 15 studies identified, 6 reported the incidence of NAS and the remaining 9 provided the risk-estimates of NAS following drug replacement therapy. These studies show the rising NAS incidence among countries with opioid overuse. Sub-analysis showed a lower risk of NAS following prenatal buprenorphine maintenance therapy as opposed to methadone maintenance therapy. These findings are vital in assessing the neonatal impact of maternal drug abuse in the context of geography and treatment. Results also highlight the need for a standardized drug maintenance protocol to improve health outcomes of mother-infant dyads.

78. Dapivirine Vaginal Ring Pre-Exposure Prophylaxis Awareness, Perceptions, and Uptake among College Women: A Systematic Review

Philip Danquah, Amanda Annan | Environmental and Occupational Health

Background: Several young women are diagnosed with HIV positive every day. Awareness of condom usage for the prevention of new HIV infections has been well documented in the literature, but awareness of newer and effective drug therapies such as dapivirine vaginal ring pre-exposure prophylaxis for the prevention of HIV infections among high-risk women groups remain dearth in the literature. **Objective:** A systematic literature review was conducted to ascertain the awareness, perceptions, and uptake of dapivirine vaginal ring pre-exposure prophylaxis among college women. **Methods:** The study conducted a systematic literature review. The search databases were Google scholar, PubMed, MEDLINE, and PsycINFO. The PRISMA systematic flow chart was utilized in the data collection procedures. The scooping search revealed the information from the various literatures that was synthesized into writing this manuscript. **Findings:** 30,500 articles were screened, but none was related to dapivirine vaginal ring pre-exposure prophylaxis awareness, perceptions, and uptake among college women. Twelve articles related to dapivirine vaginal ring pre-exposure prophylaxis clinical trials among women in general were included in the writing of this manuscript. **Conclusion:** These findings suggest that factors that are imperative in understanding what might influence the awareness, perceptions, and uptake of dapivirine vaginal ring pre-exposure prophylaxis among high-risk college women are dearth in the literature. Researchers and policymakers should focus on addressing implementation research and individual behavioral issues associated with the use, nonuse, non-adherence, and awareness of dapivirine vaginal ring pre-exposure prophylaxis among young college women.

Search Terms: “Dapivirine vaginal ring pre-exposure prophylaxis”, “Vaginal Ring as HIV Prevention”, and “Vaginal Ring as HIV Prevention among women”

Keywords: Dapivirine Vaginal Ring, Pre-Exposure Prophylaxis (PrEP), HIV Prevention, College Women’s Health

79. Perceptions of Healthcare Providers about Obesity among People Living with HIV in Nigeria

John Olawepo, Jennifer Pharr, , Raisa Kabir, Chad L. Cross | Environmental and Occupational Health

Body mass index (BMI) is a predictor of morbidity and mortality among people living with HIV (PLHIV). Recent changes in treatment guidelines supporting earlier initiation of antiretroviral therapy (ART) have resulted in fewer underweight PLHIV. Our study aimed to determine the BMI trends among PLHIV on treatment and the perceptions of healthcare providers (HCPs) about obesity among PLHIV. We carried out a retrospective data review from a recently concluded HIV treatment program (2012-2017) in two states in southeastern Nigeria. Data analyses included multi-way ANCOVA using SPSS (v. 25). Qualitative data from 16 key informant interviews with HCPs in these two states were analyzed using thematic analysis. Our quantitative study included 3530 participants, with 68% being female with a median BMI of 21.8 kg/m² at baseline. After 24 months on ART, the number of participants who were obese increased by 186% while those underweight decreased by 59%. The qualitative results showed that while several HCPs saw obesity among PLHIV on treatment as an important clinical problem, some were not worried about it as long as the client did not have any physical or cardio-metabolic complications related to obesity. Interestingly, the HCPs all felt that obesity among PLHIV was not a significant public health problem because they perceived that few HIV clients were obese. In conclusion, HCPs should keep in mind the likelihood of excess weight gain among PLHIV and the associated cardio-metabolic effects and have a plan to address it, especially with the universal roll-out of ART for PLHIV.

80. Building a Medical School: The Importance of Founding an AMWA Branch at a New Medical School in Southern Nevada

Amalie Alver, Janelle Castellino, Sabrina Antonio, and Wynona Dizon | School of Medicine

Purpose: To discuss our newly formed American Medical Women's Association (AMWA) branch and its goals in order to increase the number of female physicians in Nevada.

Background: In 2016, Nevada was ranked 49th in the country for number of active physicians with direct care of patients and 44th for percentage of active female physicians. Thirty percent of active physicians in Nevada are over age 60 (1). As our population grows, the need for more physicians is vital to the community. The need for female physicians in leadership positions prompted the charter class to form our AMWA branch in 2018.

Current Projects: For community outreach, we teach bleeding control through Stop the Bleed. We promote women's health initiatives including sex trafficking awareness. We pursue our goal of recruiting more women into medicine in Nevada through mentoring undergraduates and educating high school students on becoming doctors. This is vital to increasing physicians in Nevada, as 76.7% of those who receive undergraduate and graduate medical education here are retained and practice medicine in our state (1).

Goals: Our goal is to increase the number of female physicians in Nevada. By recruiting medical students and physicians through AMWA, we will establish a network where female physicians are more likely to practice in Las Vegas.

81. Increasing Usage of Wellness in Undergraduate Medical Education

Doris Chan, Marwa K. Maki, Jenny Hong, Faun Botor, Monica Arebalos, Cameron Sarabi, Damien Medrano, Noam Dadon, Desiree Morris, Katie Velez, Weisman, Simanton | School of Medicine

Purpose: University of Nevada, Las Vegas School of Medicine aims to incorporate wellness activities that medical students will continue to utilize long-term to promote healthy coping strategies for reducing stress.

Background: There is a high prevalence of stress in medical students that can negatively impact their wellbeing and providing compassionate care for patients². Studies show that mindfulness-based approaches are effective in decreasing stress^{3,4,5,6}. To increase wellness activity usage and student participation, it is important to provide easy accessibility. It is likely that busy students will continue with activities that are offered on campus compared with needing to find opportunities elsewhere¹.

Methods: During the pre-clerkship years, wellness activities were offered to students (yoga, mediation, etc) on campus during breaks in students' schedules. Surveys to assess the number of wellness techniques used before medical school versus the end of basic sciences were completed by 58 students. The survey included 24 activities that fell under the categories of physical movements, spiritual/mindfulness, nutrition/supplements, and body manipulation.

Outcomes: Before medical school, 58 students used a total of 223 wellness tools with a mean of 3.84 (SD=2.79) per student. At the end of basic sciences, the number increased to 272 with a mean of 4.69 (SD=3.11) per student. Wellness activities offered by UNLV demonstrated either a consistent level of technique usage (massage, dance) or an increase in usage (yoga, tai chi, meditation).

Innovation's strengths and limitations: Wellness activities were offered on campus during scheduled breaks, offering students easier access to these sessions. Limitations include survey phrasing, where activities usage was asked through "have used/currently use" format. Future surveys should include separate categories of "have used" versus "currently use" to elicit wellness technique usage.

Feasibility and transferability for adoption: Medical institutions incorporate wellness into programs to reduce stress and burnout. Offering convenient wellness activity during scheduled breaks can increase usage of wellness tools that help promote healthy coping strategies.

Keywords: Undergraduate medical education, wellness, stress, usage, continuation, participation

82. Stress among preclinical medical students is associated with poor academic performance

Damien Medrano | School of Medicine

Background

The rigors of the medical school curriculum is known to contribute to higher levels of stress among students. Studies have shown medical student stress levels are linked to numerous variables and appears to peak in 3rd year. The relationship between stress and academic performance during medical school has been studied internationally with conflicting results due to varying stress measuring tools, among other reasons. More data is needed regarding documentation of stress and academic performance among U.S. medical students.

Design/Methods:

Students (N=58) from the UNLV School of Medicine completed the Perceived Stress Scale before and after the preclinical phase. Quantitative data regarding stress levels were abstracted from the surveys. Students' Mean NBME exam scores were used to rank and divide students into three academic performance-based groups – top 1/3 (N = 20), middle 1/3 (N = 19), bottom 1/3 (N = 19). Data consisting of mean stress scores, standard deviation, 95% confidence interval, minimum, maximum, ANOVA and post hoc analysis were gathered for the three groups.

Results: The bottom 1/3 group had significantly (<0.05) higher stress levels than both the top 1/3 group and middle 1/3 group. The top 1/3 group and middle 1/3 group did not have significantly different stress levels compared to each other.

Conclusions: Medical students with lower academic performance have significantly higher stress levels than their colleagues. Low performing students may benefit the most from Wellness activities aimed at reducing stress. **Conclusions:** Medical students with lower academic performance have significantly higher stress levels than their colleagues. Low performing students may benefit the most from Wellness activities aimed at reducing stress.

83. Evaluation of students experience using pre-heated composite resin: lab trial

Carly Saxe, Garrett Berry, Elena Farfel, Neamat Abubakr Hassan | School of Dental Medicine

Introduction

The training of the future dental workforce is an essential aspect of posterior resin composites as they are extremely technique sensitive. Newer generation composites with improved properties and reduced number of steps for restoration are now the material of choice for posterior restoration (1). Polymerization shrinkage is reduced compared to earlier composite. Adaptability and marginal integrity of these composite is improved considerably (1). Improving the adaptation of resin composites during placement is necessary to increase durability and reduce microleakage (2). Pre-heating composite resin has shown to increase the ease of manipulation and improve adaptation of resin composites to tooth structure (3). Pre-heating resin composite reduces its pre-cured viscosity and enhances its subsequent surface hardness (4). The purpose of this blind lab trial was to determine if dental students were satisfied working with preheated composite resin and which temperature they prefer.

Method:

Thirty-two second year dental students at UNLV School of Dental Medicine volunteered to participate in the study. Pre-prepared Class I #30 teeth (ModuPRO® acrylic teeth) were used to eliminate preparation dimension discrepancies. Each student had the experience of using two different types of composite resin, Harmonize® and Premise®. Harmonize® is a newer nanohybrid universal composites, while Premise® is a universal nanofilled restorative composite resin (figure 1). The students were blinded from the restorative material and temperature. The material was referred to as A or B. The composite resin was heated at different temperatures (23°C, 37°C, 54°C & 68 °C) with the Calset Composite Compu Heater® (Figure 1,2).

Results:

The majority of students preferred the pre-heated Harmonize composite resin at 54°C and 68°C followed by 37° C while for Premise composite resin, the students preferred 68° C followed by 37° C and 54°C (Figure 4).

Conclusion:

Within the limitation of the present study, pre-heated composite was highly preferred by the students.

84. Dietary Habits And Anthropometric Measures Of A Dental Student Population

Ahreum Yoo, Philip Son, Karl Kingsley, Joshua Polanski | School of Dental Medicine

Purpose:

The objective of this study was to complete a longitudinal study of diet and exercise behaviors among dental students during their academic experience at UNLV SDM.

Methods:

Using and Institutional Review Board (IRB) approved protocol, students in four dental cohorts were asked to take a survey regarding their eating habits, exercise patterns, and other related attitudes and behaviors. A total of n=302/327 students participated, yielding an overall response rate of 92.3%. Self reported age, ethnicity and body mass index (BMI) were also collected. (CHI SQUARE)

Results:

More males (57.9%) than females (42.1%) completed the survey, nearly approximating the overall class composition (56%, 44%, respectively). Overall, females reported dietary behaviors closer to the recommended dietary patterns (MyPlate.gov) with higher self-reported consumption of fruits and vegetables. In addition, males were more likely to report higher frequency and levels of consumption for foods with added sugar (sugar sweetened beverages) and saturated fats than females. Self-reported BMI exhibited a high correlation with these data (R=0.81), which did not vary by cohort or year in dental school. Self-reported academic stress level was higher among males than females overall, and varied by year with the highest levels reported among first year students, followed by second, third and fourth. A smaller proportion of students reported meeting the goal of 30 minutes of daily exercise most days per week.

Conclusion:

Although many populations face significant dietary and related behavioral challenges, medical and dental students face particular stress and time-limited challenges that may negatively influence positive health outcomes. This is the first dietary study of self-reported dental student dietary patterns and health behaviors, which demonstrates areas for education and improvement may be needed to increase student wellness, overall health and well being. Key words: Nutrition, Diet, Exercise, BMI, Dental Students

85. Correlation of bruxism with excessive daytime sleepiness: Retrospective Study

Joseph Brown | School of Dental Medicine

Objective

Sleep bruxism (SB) is considered a parafunctional habit or even a sleep-related disorder. Characteristics of SB include grinding or clenching of the teeth. Moreover, it is indicated by some studies that bruxism may have an association with anxiety, as anxiety is known to induce insomnia and fragmented sleep which leads to excessive daytime sleepiness. Some studies suggest that bruxism may be correlated with excessive daytime sleepiness. The aim of our study is to identify if there is a correlation between SB and excessive daytime sleepiness

Hypothesis

Null (H0) Hypothesis

There is no correlation between SB and excessive daytime sleepiness

Alternative (HA) Hypothesis

There is a significant correlation between SB and excessive daytime sleepiness

Methods

A retrospective keyword search of the clinical notes of patient charts in axiUm™ was performed using the search terms “sleep bruxism” and “clenching” to identify the number of cases that were documented with sleep bruxism and clenching. The inclusion criteria for the patient population encompassed patients who were 18 years and older and were seen at UNLV School of Dental Medicine from the years January 2014 to September 2018. Data from patients’ sleep forms were also collected.

Results

190 out of 635 patients presented with SB. 28 out of the 190 patients presented with a total sleep score of ≥ 11 indicating excessive daytime sleepiness.

The Chi-square statistic is 26.3999. The p-value is <0.00001 .

Conclusion

There is a significant correlation between sleep bruxism and excessive daytime sleepiness

86. Bruxism and non-carious cervical lesions: a retrospective study

Angelica Jane Bustos | School of Dental Medicine

Purpose: The aim of the present study is to investigate the presence and type of non-carious cervical lesions associate with bruxism

Method: A retrospective keyword search of the clinical notes of all patient charts in axiUm™ was performed using the search terms “bruxism”, “attrition”, “abrasion”, “erosion”, and “abfraction” to identify the number of cases that were documented with bruxism and non-carious cervical lesions. The sample included only patients 18 years and older who presented to the UNLV School of Dental Medicine from January 2014 to September 2018. Patients who presented with one or more of the search terms were included which resulted in a total of 5,080 patient cases. All patients with incomplete records, duplicate records, and non-bruxer patients were excluded giving a final sample size of 597.

Results: Attrition and abfraction were the most common type of non-carious cervical lesions associated with bruxism ($P<0.001$). 517 cases had presented with multifactorial lesions where attrition was the main factor ($P<0.001$). For abfraction, 279 cases presented with abfraction as the main multifactorial lesion ($P<0.001$). The most commonly affected teeth for attrition were the maxillary anterior followed by mandibular anterior teeth. Abfraction lesions were mainly sited in maxillary premolars followed by mandibular premolars.

Conclusion: Within the limitation of the present investigation, it was concluded that attrition and abfraction were highly associated with bruxism.

Science Poster Session E – Ballroom



PRESENTATIONS:

9:00 – 9:15 AM	#87 Brianne Borgia, Kinesiology
9:15 - 9:30 AM	#88 Devin Kelly, Kinesiology
9:30 - 9:45 AM	#89 Boram Lim, Kinesiology
9:45 - 10:00 AM	#90 Julien Mihy, Kinesiology
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#91 Jacquelyn Sertic, Kinesiology
10:45 - 11:00 AM	#92 Alina Swafford, Kinesiology
11:00 - 11:15 AM	#93 Mathew Sunil Varre, Kinesiology
11:15 - 11:30 AM	#94 Jason Longhurst, Physical Therapy
11:30 - 11:45 AM	#95 Jason Avedesian, Kinesiology
11:45 – 12:00 PM	#96 Amanda Leisgang, Health Physics

87. Similarities in Joint Stiffness Across Footwear Conditions in Older and Younger Runners

Brianne Borgia | Kinesiology

Although the literature on both the effect of footwear and the effect of aging on running mechanics is extensive, the effect of footwear on joint stiffness in older, habitual runners remains unknown. The purpose of this study was to examine the effects of footwear on lower extremity joint stiffness between older and younger runners. Ten younger runners (age: 26-35) and ten older runners (age: 45-65) were provided with a neutral shoe and a maximal cushioning shoe in their self-reported shoe size. In addition, participants were asked to bring a pair of their own running shoes to represent a third footwear condition. Running kinematics were captured using a 10-camera motion capture system while participants ran at a controlled pace of 4.0 m/s ($\pm 5\%$) over a 10-m runway with force platforms collecting kinetic data. Participants ran in each of the three footwear conditions, the order of which was randomized. Stiffness values of the ankle and knee were analyzed using a 2x3 (group x shoe) mixed analyses of variance. No significant interactions were observed between group and shoe for joint stiffness at the ankle or knee. Although prior research has demonstrated altered joint stiffness due to footwear, we observed no differences in ankle or knee joint stiffness between shoe conditions. The participants in this study were compared in matched groups based on weekly mileage. It is possible that the similar gait characteristics between young and older runners can be credited to their active lifestyle.

88. Hip Mechanics During Gait in Sedentary Adults

Devin Kelly | Kinesiology

Obesity is a risk factor for osteoarthritis (OA). Sedentary behavior leads to obesity and may also influence the progression of OA. Investigating hip mechanics during gait in sedentary adults may offer insight into the effect of sedentary behavior on biomechanical factors associated with the development of hip OA. **PURPOSE:** To assess hip biomechanics during gait to explore sedentary behavior effects on the progression of hip OA. **METHODS:** Three-dimensional kinematic and kinetic data were collected as 9 sedentary normal weight adults (group 1) and 9 sedentary obese adults (group 2) walked at their preferred speed. Differences in hip range of motion (ROM) and peak moments were determined using independent t-tests ($\alpha=0.05$). **RESULTS:** Group differences in mass were observed (62.53 ± 8.38 kg; 90.95 ± 11.63 kg; $p = 0.001$). ROM in the sagittal ($40.31 \pm 4.68^\circ$; $41.11 \pm 6.05^\circ$; $p = 0.48$) and transverse planes ($13.48 \pm 3.29^\circ$; $13.27 \pm 4.15^\circ$; $p = 0.78$) were similar between groups. Coronal plane ROM was significantly greater in group 1 than 2 ($13.94 \pm 2.68^\circ$; $12.63 \pm 2.60^\circ$; $p = 0.02$). Average peak hip extension moments were also similar between groups (50.60 ± 13.72 Nm/kg; 51.44 ± 14.63 Nm/kg; $p = 0.78$). **CONCLUSION:** Sedentary normal weight and sedentary obese individuals had similar sagittal ROM and peak extension moments. Individuals with hip OA experience limited sagittal ROM and reduced extension moments. This suggests that sedentary behavior, regardless of body mass, may contribute to the development of hip OA.

89. Muscle Activity While Swimming in Triathlon Wetsuits

Boram Lim | Kinesiology

In a triathlon event, people use various strategies for enhancing their triathlon performance. During the swimming portion of a race, triathletes typically wear a wetsuit either full sleeve or sleeveless. Anecdotally, triathletes may select a sleeveless wetsuit because the full sleeve may increase shoulder movement resistance.

Purpose: The purpose of this study was to investigate shoulder muscle activity influenced by wetsuit design.

Methods: Seven subjects (5 male and 2 female, age: 45.7 ± 8.0 yrs, height: 174.8 ± 10.5 cm, mass: 70.1 ± 9.4 kg) participated in the experiment. Muscle activity of the Anterior Deltoid (AD) and Posterior Deltoid (PD) was measured using a waterproofed electromyography (EMG) system. Participants were asked to swim 50m at a 'somewhat hard' pace that they could maintain the pace for a sprint triathlon distance (750m): No wetsuit (NWS), sleeveless wetsuit (SLW), and full sleeve (FSW). Five consecutive stroke cycles were then extracted for analysis as well as the time to complete the five cycles. Time and average data were compared between conditions using a 1 x 3 (wetsuit condition) repeated measures ANOVA.

Results: Muscle activity of both AD and PD were not different among all wetsuit conditions ($p > 0.05$). However, time was different among conditions ($p < 0.05$) with FSW being shorter than NWS ($p < 0.05$), but between the two wetsuits (FSW and SLW) were not different ($p > 0.05$).

Conclusion: While swimming at a somewhat hard intensity, wetsuit design did not influence muscle activity of the shoulder muscle. However, stroke time was influenced by wearing a wetsuit regardless of design.

90. Comparisons Of Running Mechanics Between Injured And Non-Injured Cross-Country Runners

Julien Mihy | Kinesiology

PURPOSE: The purpose of this study was to compare ankle power, peak plantarflexion moment, and ankle range of motion (ROM) between injured and uninjured Division-I cross-country athletes. **METHODS:** Six Division-I female cross-country athletes reported prior to the start of the cross-country season. Athletes completed 5 running trials at a preferred pace while kinetic data were collected over a 15-m runway with three embedded force platforms in a laboratory equipped with ten 3D motion capture infrared cameras. Ankle ROM, peak plantarflexion moment, and average ankle plantarflexion power were calculated. Injury reports were obtained from the team's certified athletic trainer at the end of the season. These reports allowed for the stratification of athletes into injured and uninjured groups. Data from six athletes were used for the current analysis. **RESULTS:** Three athletes sustained left foot injuries during the season. Injury status had a small effect on plantarflexor power ($g=0.25$) and ankle ROM ($g=0.25$), and a medium effect on peak plantarflexor moment ($g=0.68$) of the injured ankle. Injured athletes exhibited lower magnitudes of the variables of interest compared to uninjured athletes: average plantarflexor power (274.8 ± 53.5 and 306.1 ± 101.4 Nm/s respectively), less ankle ROM (41.5 ± 4.3 and $44.1 \pm 8.3^\circ$), and lower peak plantarflexor moments (124.1 ± 12.3 and 140.0 ± 17.8 Nm). **CONCLUSION:** Based on the results of the current study peak plantarflexion moment may be of interest when investigating foot injury risk. This information has the potential to inform pre-screening gait analyses and subsequent coaching and clinical interventions.

91. Elite Athlete Performance not Enhanced with OPTIMAL Theory Factors from Single Practice Session

Jacquelyn Sertic | Kinesiology

According to the OPTIMAL theory of motor learning (Wulf & Lewthwaite, 2016), autonomy support (AS), enhanced expectancies (EE), and external focus (EF) are key to effective motor performance and learning. AS allows individuals to exercise control, EE provides performers with a sense of confidence, and EF directs attention to intended movement effects. Previous research indicates that these factors individually and collectively can improve motor performance and learning in novices and experienced performers. Few studies have used elite performers as participants. **Purpose:** To determine whether skilled throwing performance can be enhanced by a successive implementation of AS, EE, and EF. **Methods:** Twenty-four healthy, elite female softball players (21.36 ± 1.58 yrs, 14.44 ± 2.75 yrs of softball experience) threw softballs at a bullseye target (10m). Athletes were divided into two groups: 1) an OPTIMAL group provided with all three factors, and 2) a control group. Specifically, the OPTIMAL group choose between softballs (AS), was given a liberal definition of success (EE), and instructed to focus on the bullseye (EF). Throwing accuracy was assessed during five 12-throw blocks: a baseline block; 3 practice blocks with factor introduction; a transfer test block (12m). **Results:** No significant group difference in throwing accuracy were seen for baseline, Blocks 1-3, or transfer, $F_s(1,22) < 1$. **Conclusion:** Motor patterns of repeatedly practiced movements might be so strongly ingrained that a single practice session might not enhance the movement. Future research should examine whether the implementation of the three factors over a longer time period (e.g., sporting season) has effects on skilled performance.

92. Descriptive Kinetics on Unique Skills Performed by a Professional Acrobatic Artist

Alina Swafford | Kinesiology

Acrobatic performers are in essence professional athletes who are employed in the entertainment industry. However, there is limited research examining skills through a biomechanical lens. **Purpose:** To describe peak forces during certain acrobatic skills performed by a professional artist. **Methods:** A professionally trained male subject (age: 24 yo; mass: 65.8 kg) participated in this study. The subject performed eight different acrobatic skills. Data collection consisted of using two force platforms (Kistler) and a 3D motion capture system (Vicon). The average peak force was calculated when four peaks were examined, and maximum peak force was examined for the two peak skills. Kinetic data were used to identify which body part was in contact with the ground and corresponded to a particular force peak. **Results:** Average peak forces were: one hand hop hand = 3.60 ± 0.10 N, air chair (hand) = 1.92 ± 0.13 N, air chair (head) = 3.64 ± 0.57 N, and flare = 2.54 ± 0.43 N. Peak forces for jump and landing during certain skills were: maximum vertical jump = 3.08 N and 5.80 N, front flip = 2.22 N and 10.97 N, back flip = 2.88 N and 11.94 N, single leg jump (right leg) = 2.29 N and 4.07 N, and single leg jump (left leg) = 2.27 N and 4.20 N. **Conclusion:** Interestingly, peak forces during movements where the hand or head were in contact with the ground were similar in magnitude with landing on the feet from a vertical jump.

93. Muscle activity during static and dynamic postural control in children with autism

Mathew Sunil Varre | Kinesiology

Autism Spectrum Disorder (ASD) is a child-onset neurodevelopmental disorder that affects one in 45 children in the United States. Increasing evidence has shown that individuals with ASD display gross motor deficits and that children with ASD display greater postural instability in comparison to children with typical neurodevelopment (TD). The purpose of this proposed study is to investigate postural control (balance) during static and dynamic movements in children with ASD compared to children with TD. Posturography and lower extremity electromyography will be utilized to assess differences in the center of pressure parameters. A static task will comprise standing on a force platform during four conditions. The participants will also perform gait initiation and walking tasks as part of a dynamic postural control assessment. In addition, bilateral muscle activity of the rectus femoris, biceps femoris, gastrocnemius medialis, and tibialis anterior will be assessed. We expect the children with ASD to have greater sway, larger sway area, and longer sway path length in comparison to children in the TD group. We also expect to observe significant differences in peak and average amplitudes of the four muscles in children with ASD compared to children in the TD group during the static and dynamic tasks. The results of this study will provide new insight into recruitment patterns of muscles within the lower extremities with respect to the maintenance of balance, initiation of gait, and the continuance of gait in children with ASD.

94. The cognitive profiles differ among freezing of gait sub-types in Parkinson's disease.

Jason Longhurst, Jessica Caldwell, Virendra Mishra, Brent Bluett, Merrill Landers | Physical Therapy

Freezing of gait (FOG) in Parkinson's disease (PD) is associated with cognitive impairment. However, there are little data on cognitive deficits within FOG subtypes. We aimed to analyze differences in cognitive profiles among FOG subtypes. 39 individuals with PD (19 with FOG) completed the Freezing of Gait Score in the OFF and ON PD medication state and were dichotomized on the following non-mutually exclusive subtypes: Levodopa-responsive FOG (n=11), dual task (DT)-triggered FOG (n=10), turn-triggered FOG (n=13), initiation-triggered FOG (n=6). Motor symptoms, and disease stage were also collected and DT effects (DTE) were calculated. Cognitive testing included the following domains: global cognition, processing speed, inhibition, and multi-tasking. Individuals with FOG, had poorer performance on DTEs (ps<.008), global cognition (p=.028), multi-tasking (ps<.010), and more motor symptoms (ps<.005). The levodopa-responsive group had fewer motor symptoms (p=.034) and less FOG (ps<.027); higher inhibition (ps<.043) and more DTE (ps<.033). DT-triggered and turn-triggered FOG groups exhibited similar results to each other with poorer multi-tasking (ps<.041). The initiation-triggered FOG group had poorer global cognition (p=.037), processing speed (ps<.047), more FOG (p<.004), and a higher stage of severity (p=.013). FOG is complex and subtypes may be differentially associated with disease severity and cognitive impairment. Individuals with levodopa-responsive FOG had less severe motor symptoms and FOG; however, they had more trouble tuning out irrelevant stimuli. While previous research has shown an association between processing speed, global cognitive deficits, and FOG, our findings suggest that these may be associated with the initiation-triggered FOG subtype.

Key words: Freezing of Gait, Parkinson's disease, Cognition, Dual task

95. Validation of a Wearable Inertial Sensor Unit to Measure Balance and Sway during Postural Tasks

Jason Avedesian | Kinesiology

Current postural control tests for concussion analysis are of moderate reliability. A recently developed inertial measurement unit (IMU) may offer clinicians a feasible, objective tool for postural control analysis surrounding a concussive event. **PURPOSE:** To assess the validity of a wearable IMU against a force platform (FP) during postural control tasks. **METHODS:** Twenty-four participants completed four stance conditions with eyes open (EO) and eyes closed (EC). Concurrent measures of postural control during each stance were collected as participants stood on a single FP while wearing the IMU on the sternum. Statistical analyses were conducted on mean percentage change (MPC) from EO to EC for sway parameters from the FP and IMU during the stance conditions. **RESULTS:** The differences in MPC when comparing the IMU to the FP were 5-33% for double-leg stance, 8-130% for tandem stance, 0-82% for left leg stance, and 12-178% for right leg stance. Multivariate differences ($p < .05$) were found for all stance conditions. Pairwise comparisons indicated significant differences for anterior-posterior sway ($p = .010$) and path length ($p < .001$) during double-leg stance and path length ($p = .005$) during tandem stance. **CONCLUSIONS:** Preliminary results indicate large differences in postural control when utilizing this IMU versus a FP for assessing sway. Further study of the IMU projection algorithm is necessary to make more appropriate comparisons between instruments. It is important for researchers to understand algorithms that are implemented in IMU software to determine reliability of measurement.

96. Evaluation of a novel mouse model with loss of GABAB receptors through an immune challenge

Amanda Leisgang | Health Physics

Alzheimer's Disease (AD) is a neurodegenerative disease that is clinically described as the progression of learning and memory deficiencies. Pathologically, AD is characterized by the presence of three core features, beta-amyloid plaques (A β), neurofibrillary tangles (NFT), and chronic neuroinflammation. Activation of microglia, the central nervous system's resident immune cell, is responsible for neuroinflammation through the release of pro-inflammatory cytokines. Alterations have been demonstrated in gamma amino butyric acid (GABA), the principle inhibitory neurotransmitter in the brain, shown to be necessary in learning and memory, along with GABAergic signaling markers, including the metabotropic receptor GABAB. GABAB receptors are found on microglia and have been shown to have anti-inflammatory properties. Loss of this receptor could play an important role in exacerbating the disease. To investigate how the decrease in the GABAB receptor modulates neuroinflammation, we developed a novel mouse model with the loss of this receptor restricted to microglia (GAB/CX3ert).

In this study, we aimed to evaluate how an immune challenge in the GABA/CX3ert mice alters inflammation. To evoke an immune response, GAB/CX3ert and wildtype control mice were treated with polyinosinic:polycytidylic acid (Poly(I:C)). Following treatment, mice were subjected to behavioral tasks involving learning and memory and evaluated by a range of cellular and molecular techniques including flow cytometry, Luminex multiplex assay, and qRT-PCR. The novel GAB/CX3ert mice can be used to facilitate research in neuroinflammation to better understand its role in AD and help in the development of therapeutic treatments targeting this hallmark.

Science Poster Session F – Ballroom



PRESENTATIONS:

8:30 – 8:45 AM	#97 Cody Buhler, Dental Medicine
8:45 – 9:00 AM	#98 James Chon, Dental Medicine
9:00 - 9:15 AM	#99 Nareh Eshgian, Dental Medicine
9:15 - 9:30 AM	#100 Corey Foulk, Dental Medicine
9:30 - 9:45 AM	#101 Jeremy James, Dental Medicine
9:45 - 10:00 AM	#102 Audrey Morris, Dental Medicine
10:00 – 10:30 AM	Break
10:30 - 10:45 AM	#103 Eric Ochoa, Dental Medicine
10:45 - 11:00 AM	#104 Jacob Ozuna, Dental Medicine
11:00 - 11:15 AM	#105 Michael Rafferty, Dental Medicine
11:15 - 11:30 AM	#106 Kriztine Mae Uy, Dental Medicine
11:30 - 11:45 AM	#107 Haley Whalen, Dental Medicine
11:45 – 12:00 PM	#108 Anthony Fusco, Orthodontics and Dentofacial Orthopedics

97. Caffeic Acid Phenethyl Ester Effects on Dental Pulp Stem Cells

Cody Buhler | Dental Medicine

Objectives: Caffeic acid phenethyl ester or CAPE is an organic molecule produced by honeybees, which has been previously evaluated for its anti-tumor effects in many types of cancer – including oral cancers. However, no studies to date have evaluated any potential positive effects of CAPE on dental pulp stem cells (DPSC). Based upon the lack of information regarding the effects of CAPE, this study sought to evaluate the effects of CAPE on cellular viability and proliferation in three, primary DPSC explants.

Methods: Using three primary DPSC explants (dpssc-3882, dpssc-5423, dpssc-8604) CAPE was administered at previously identified bioactive concentrations (20 uM, 100 uM, 200 uM) in three day *in vitro* assays. Trypan blue exclusion assays were used to determine any effects on cellular viability and proliferation was measured using 96-well microplate assays.

Results: The results from this study demonstrated CAPE induced differential effects on each of the DPSC isolates. For example, CAPE induced an increase in proliferation of dpssc-3882 cells between 9.8-23.4% over the range [100-200 uM] (viability up to 42.5%). Similarly, dpssc-8604 growth increased up to 64% (viability up to 67%), while dpssc-5423 growth increased up to 79.9% over the same concentration range (viability up to 74%).

Conclusions: Although these data are from a preliminary study of the effects of CAPE on DPSCs, the nearly uniform effects on cellular proliferation over the biologically relevant range of [100-200 uM] provides evidence of the positive effects of this compound on cellular growth.

98. Aging, Telomere Length, and Periodontitis

James Chon Linh M. Nguyen, Jeffrey L. Ebersole, |
Dental Medicine

Objectives

Telomere shortening with age is well documented and is theorized to be the basis for cellular senescence and increased chronic diseases in aging. Periodontitis is one of these chronic diseases. We hypothesized that shortened telomere length is associated with the presence of chronic periodontitis across the lifespan.

Experimental Methods

Datasets from the 1999-2000 and 2001-2002 National Health and Nutrition Examination Survey (NHANES) were interrogated. Pocket depths and attachment loss were coupled with analysis of telomere measures and the association was estimated using SPSS. Periodontitis was defined as: ≥ 1 tooth with pocket depth of ≥ 4 mm and ≥ 3 mm of attachment loss occurring on the same tooth. Mean telomere lengths were compared between people with or without periodontitis (T-test). Significant differences in mean telomere lengths stratified on: Age (binned every 10 yrs, starting at age 30), Race/Ethnicity (Hispanics, Whites, Blacks, Other), and Periodontitis (Yes, No) were determined using ANOVA.

Results

For both the **1999-2000** ($p=0.009$) and **2001-2002** (Maxillary $p=0.030$ and Mandibular $p=0.001$) periodontitis subjects demonstrated shorter telomere lengths. ANOVA results identified a significant relationship of these differences with Race ($p=0.002$), Periodontitis ($p=0.014$), and Age ($p=0.000$) for the **1999-2000** sampling. Similar assessment for **2001-2002** showed this same relationship to Age ($p=0.000$), Periodontitis ($p=0.041$), and Race ($p=0.000$). Thus, we identified significant relationships between telomere length and periodontitis that are modified or impacted by Age and Race/Ethnicity.

Conclusions

A clear limitation of the study includes the inherent constraints of the NHANES periodontal data recorded during these sampling periods, although, our results were consistent within the available datasets. Since these differences in telomere lengths with periodontitis were observed across a broad age range, and harmonious with existing data of increased disease related to Race/Ethnicity, periodontitis may not simply be a disease of aging, but may actually transmit chronic signals that propel more rapid biologic aging.

99. The Rarity of Hypodontia, Hyperdontia and Concomitant Hypo-Hyperdontia

Nareh Eshgian | Dental Medicine

Introduction: The objective was to determine the prevalence of hypodontia, hyperdontia and concomitant hypo-hyperdontia (CHH) among patients attending the UNLV School of Dental Medicine clinics. **Methods & Materials:** A retrospective search was conducted using keywords in AxiUm™ such as “hypodontia”, “hyperdontia”, “supernumerary teeth” and “congenitally missing”. Patients studied were 4 years and older and seen at SDM clinics from the years 2010 to 2018. Panoramic radiographs were used to confirm the hyperdontia, hypodontia or CHH. Results were analyzed using the chi-square test. **Results:** 1101 patients were populated using the keywords. From these populated patients, 186 (16.89%) had hyperdontia, 23 (2.1%) hypodontia, and 3 (0.2725%) presented with CHH. The distribution of males and females with any form of dental anomaly was 54.7% and 45.3% respectively. Hispanics, African Americans, Asians, Caucasians and ethnically unspecified patients represented 43.39%, 14.25%, 3.30%, 8.02%, and 31.13% respectively, of those with a dental anomaly (P value<0.00001). Hyperdontia was most common amongst Hispanic patients with 39.24% followed by the unspecified patients at 32.8% (P value<0.00001) as well as amongst males at 56.45% (P value of 0.037532). Unidentifiable supplemental teeth were overall the greatest in number with the lower right premolars, tooth 28, being the most common. This was demonstrated in the Hispanic patients whereas within the African American patients, 4th molars, specifically tooth 16 was in excess. **Conclusion:** Results showed that the Hispanic patient population has a significant link to dental anomalies, specifically hyperdontia. These results have also demonstrated a statistically significant presence of hyperdontia in men.

100. Gingival Mucosal Platelet Activating-Factor Acetylhydrolase (PAF-AH) Expression During Ligature Induced Periodontitis

Corey Foulk | Dental Medicine

Objectives: Platelet activating-factor (PAF) is a lipid inflammatory mediator postulated to play a role in periodontitis. PAF-AH is an anti-inflammatory enzyme that degrades PAF and limits its actions. This project investigates the expression of PAF-AH in gingival tissue samples obtained from periodontal lesions using primate models of periodontitis.

Methods: Rhesus monkeys (*Macaca mulatta*) in four age group were subjected to a ligature-induced periodontitis protocol. Gingival tissue samples were obtained from each animal at baseline (health), or periodontitis-affected (0.5, 1, 3 months post-ligature) from premolar/molar maxillary regions of each animal. An additional sample was obtained at 2 months following the ligature removal (resolution). Bleeding on probing (BOP) and probing pocket depth (PPD) data was obtained for all animals. Total RNA was isolated from gingival tissues and the transcriptome analyzed using the GeneChip® Rhesus Macaque Exon 2.0 Array (Affymetrix). Gene expression data was extracted for PAF-AH. The PAF-AH microarray data was validated by qRT-PCR for all AD samples (n=45).

Results: PAF-AH expression increased nearly 2-fold at initiation of disease (2 weeks) following ligature placement in all four age groups. PAF-AH expression remained elevated throughout the course of periodontitis and returned to baseline or below at disease resolution. PAF-AH expression levels correlated with both BOP and PPD. Real-Time PCR analyses of the AD samples demonstrated excellent agreement with the microarray data, although PAF-AH fold-increases were higher using qPCR.

Conclusions: Ligature-induced periodontitis upregulated the expression of the anti-inflammatory enzyme PAF-AH. Increased PAF-AH could serve to help limit the deleterious effects of PAF.

101. Apoptotic pathways during periodontitis across the life span.

Jeremy James | Dental Medicine

Objective: Apoptosis regulates the inflammatory response through the generation of anti-inflammatory signals for phagocytes and removal of inflammatory cells from tissues. We assessed apoptotic genes/pathways during initiation, progression, and resolution of periodontitis.

Methods: A longitudinal study of healthy gingival tissues at baseline from 4 age groups of rhesus monkeys (*M. mulatta*; young, adolescent, adult, aged; n=9/group) and tissues following ligature-induced periodontitis at 2 weeks and 1 month (Initiation), and at 3 months (Progression) post-ligation. Ligatures were removed and samples taken 2 months later (Resolution). Total RNA was isolated from tissues and the Rhesus Gene 1.0 ST (Affymetrix) used for expression analysis of 87 apoptotic genes. qPCR for selected genes was implemented.

Results: Unique profiles of pro- and anti-apoptotic genes in the four age groups were noted with health and during periodontitis. Initiation of periodontitis demonstrated significant clinical differences across age groups. The gingival gene expression studies showed a greater balance in expression of pro- and anti-apoptotic genes in the younger versus older animals. Gene targets most specific for disease progression included members of the PI3-kinase family, a group of IL-1 genes, and protein kinase-A members.

Conclusion: Intrinsic and extrinsic apoptotic genes/pathways are engaged with the initiation of periodontitis, while variation in the expression of specific subsets of apoptotic genes is associated with both progression and resolution of disease. A persistently altered balance in the expression of apoptotic molecules in clinical health and during the course of disease in aged individuals could suggest an age-related impaired apoptotic response in periodontitis.

102. The Correlation Between Bruxism, Headache, and TMD: A Retrospective Study

Audrey Morris Patricia Grabowski, Tanya-Al Talib, Neamat Hassan Abubakr Hassan, | Dental Medicine

Objective:

Sleep bruxism can trigger TMD and headaches. The objective is to evaluate the correlation between bruxism, headache, and TMD.

Methods:

A keyword search of the clinical notes of patients' charts in axiUm™ was performed using the search terms "TMD", "headache" and "sleep bruxism" to identify these patients. The inclusion criteria were dentate and partially dentate patients within the age range of 18 to 65 years old, who attended the UNLV School of Dental Medicine clinics, between January 2014 and September 2018. Patients with incomplete records and those who were completely edentulous formed the exclusion criteria. The final sample was made up of 529 patients. Data were analyzed using the Pearson Correlation Coefficient.

Results:

The highest percentage of study subjects was in the age range of 29-34 (17.9%) with a statistically significant correlation to pain on opening ($P=0.0403$). Females showed a statistically significant correlation to TMJ clicking ($P=0.0033$). Caucasians also had a statistically significant correlation to TMJ clicking ($P=0.0001$). In addition, a statistically significant correlation between pain on opening or chewing and headaches was also observed ($P=0.0081$).

Conclusion:

Within the limitations of the present study, Caucasians and females presented with more TMJ clicking than the other study subjects. Young adults in particular, experienced more pain on opening or chewing.

103. The Use of Craniometrics to Approximate Stature in White Females

Eric Ochoa, Michael McNinch, Joshua M. Polanski |
Dental Medicine

Objectives: Stature estimations of unknown individuals are typically done using regression formulae on femur length. These formulae, however, require knowing the sex and ancestry of the individual, which cannot be obtained from long bones. Recent work has focused on using craniometrics to estimate stature, as that demographic information is within the skull. This work has so far involved stature estimation in males. This project tests the hypothesis that craniometrics can be used to estimate stature in females.

Methods: 106 cranial measurements were taken on 160 white females. The measurements were selected in order to encompass as much of the skull as possible without being overly redundant. Measurements were taken on the left side of the skull. Pearson's correlations were calculated between cranial measurements and stature.

Results: Results showed low, but statistically significant correlations between certain craniometrics and stature. As with previous work, the strongest correlations with stature were those measures of cranial length.

Conclusion: While there are statistically significant correlations between stature and measurements of the cranium, these correlations are relatively moderate. Stature estimation should still be done using long bones. However, several studies (including this one) have shown the strongest correlations of stature with cranial length. This is an avenue for further research.

Key words: Forensic anthropology, estimation techniques; anthropometry

104. Prevalence of Cracked Tooth Syndrome (CTS) in Southern Nevada

Jacob Ozuna, Benjamin Barborka, Neamat Hassan
Abubakr Hassan | Dental Medicine

Introduction

A regional comparison of cracked teeth in the United States ranked the Southwest the second highest in occurrences. The aim of our study is to identify the prevalence of cracked teeth in Southern Nevada in order to gain insight in this phenomenon and increase regional awareness.

Methods

A retrospective keyword search of the clinical notes of patient charts in axiUm™ was performed using the search terms “crack” and “fracture” to identify the number of cases that documented cracks and fractures. The inclusion criteria for the patient population encompassed patients who were 18 years and older and were seen at UNLV School of Dental Medicine from 1/1/2010-8/1/2018. The Demographics of the data collected were analyzed using the Chi-square test against the demographics for Clark County and UNLVSDM clinic populations.

Results

22.8% of the patient population who presented with Cracked Tooth Syndrome (CTS) was between the ages 45-54 (P value<0.0001). The distribution of males to females with CTS was 49% and 51% respectively. Caucasians and African Americans represented 58.9% and 21.1%, respectively, of the CTS population (P value<0.0001). Cracks had a predilection for certain surfaces and teeth as well.

Conclusion

Ethnicity and age are integral predictors for patients who may be at risk for CTS when no other diagnosis can be rendered for pain in a seemingly healthy mandibular 1st and 2nd molar or maxillary 1st premolar and molar.

105. Translating A New Dental Pulp Stem Cell Zinc-Finger Transcription Factor

Michael Rafferty | Dental Medicine

Introduction: Many genes have yet to be sequenced and characterized, such as the recently identified gene, Windpipe Homolog 1. WH1 was found to be expressed in two undifferentiated mesenchymal dental pulp stem cell isolates (DPSC), revealing a mRNA sequence that may produce a zinc-finger transcription factor.

Methods: Using WH1 gene-specific primers, cDNA was generated from DPSC mRNA. The cDNA was processed using an in vitro translation (IVT) kit. Western blot analysis and amino acid sequencing was performed to verify the identity and primary sequence of this protein.

Results: Using WH1 gene-specific primers, cDNA of approximately 1.8 kb was generated from DPSC mRNA. The cDNA and plasmid pBlueScript II were processed with PvuII and ScaI for ligation. The recombinant WH1-containing plasmid was transfected using the Stratagene Transfection Kit and visualized using the beta-galactosidase assay. Experimental cells demonstrated protein expression localized in the nucleus, which corresponds with the predicted location of a transcription factor. In addition, the cDNA was digested with Hind III and EcoRI for ligation in the pT7CFE1 expression vector from the Cell-Free IVT Kit. Confirmation of the Green Fluorescent Protein control and the WH1 protein was established using Western Blot analysis and fluorescence microscopy with the full-length protein sequence confirmed by GenScript.

Conclusions: The results demonstrated that a 582 bp zinc-finger transcription factor (ZNF582) is produced, and translation of the full-length cDNA transcript demonstrates that this protein appears to localize in the cell nucleus, which supports the predicted function of a zinc-finger transcription factor that is expressed in DPSCs.

106. Association of the Interleukin-4 -590T/C Polymorphism with Short Tooth Roots

Kriztine Mae Uy, B. Elizan, B. Chrzan | Dental Medicine

The multiple roles of IL-4 in bone homeostasis include the suppression of osteoclast development and function. The single-nucleotide polymorphism in the IL-4 gene promoter at -590 has been reported to alter IL-4 expression. A model is proposed where changes in the level of IL-4 expression may result in an individual's predisposition to root resorption during orthodontic treatment. Without potential genetic markers, pre-treatment radiographic evidence of short roots is the only indication of a predisposition to resorption during orthodontic treatment. **Objectives:** To assess the frequency of the alleles and genotypes of the IL-4 -590T/C gene (rs2243250) polymorphism in patients exhibiting short roots with no history of orthodontic treatment. **Methods:** A total of 49 subjects were categorized as exhibiting short roots (25) or normal roots (24), based upon the root morphology of incisors and mandibular premolars evident on 3D CBCT pre-treatment scans. Genomic DNA was obtained from buccal swab samples. PCR amplification of a region encompassing the -590 site was performed, followed by BsmFI digest. Amplified PCR products (646bp) and digested fragments were separated by agarose gel electrophoresis. **Results:** The fragments of 601 bp and 45 bp corresponded to -590C and a single 646 bp fragment corresponded to -590T. The genotypic distribution showed a statistically significant predominance ($p < 0.05$) of the CT genotype in patients with short roots. **Conclusions:** Although the increased frequency of the CT genotype was statistically significant in short root patients, the results do not support a significant difference in T or C allele frequencies.

107. Effects of Generated Free Oxide Radicals on Dental Pulp Cells

Haley Whalen | Dental Medicine

Introduction: Achieving disinfection of exposed dental pulp tissues during endodontic treatment is difficult with currently available agents, and therefore alternative methods of biofilm disruption are of great interest. Titanium electrolytic generated free oxide radicals have been shown to disrupt microbial biofilms in a number of industrial applications. In order to consider the use of these in endodontics, it is vital to assess their impact on dental pulp stem cells (DPSCs). Here, DPSCs were exposed various levels of exposure to free oxide radicals generated by specifically coated titanium electrodes, and rates of apoptosis evaluated. **Methods:** Human DPSCs clonally isolated from extracted third molars were exposed to free oxide radicals by passing 6V current through titanium electrodes anodically coated with tubular TiO₂. DPSCs were exposed to free radicals for 0, 15, 100 and 300 seconds in a .09% saline solution and subsequently fixed in 10% formalin. Apoptosis rates in the total population of DPSCs at each exposure time point were assessed by flow cytometry through the use of an APO-direct labeling kit. **Results** DPSCs exposed to free oxide radicals for less than 300 seconds showed no significant changes in their apoptosis rates compared to controls. DPSCs exposed to free oxide radicals for 300 seconds showed an increased proportion of apoptotic cells compared to controls. **Conclusion:** It has been established that the titanium electrolytic generated free oxide radicals do not caused increased rates of apoptosis in a population of clonally isolated DPSCs at exposure time points of up to 100 seconds. However exposure of DPSCs to titanium electrolytic generated free oxide radicals for 300 seconds caused a significantly increased proportion of DPSCs to undergo apoptosis compared to unexposed controls. As previous testing has shown that bacterial cell shredding occurs at 15 seconds of exposure, titanium electrolytic generated free oxide radicals may prove useful in endodontic disinfection.

108. Effect of dietary components on performance of Orthodontic brackets

Anthony Fusco, Syed M Ahmed, Jared Link, Dr. Tanya Al-Talib, Neamat Abubakr Hassan | Orthodontics and Dentofacial Orthopedics

Objectives

The present in-vitro study aimed to evaluate the performance of different orthodontic brackets when exposed to different dietary components.

Methods

Metal and clear orthodontic brackets were bonded to 24 extracted second maxillary premolars (a set of 12 for each type of bracket). The teeth were divided into eight groups: three active and one control for both metal and clear brackets. Using three dietary solutions and water (control), the teeth were submerged for 15 minutes three times daily at different intervals to simulate an in-vivo environment and were kept in regular water at room temperature (23°C). Readings of the classic and 3D VITA shade were recorded immediate post-bonding, after 24 hours, 72 hours, 3 days, 7 days, 14 days, 21 days, and 28 days. The shear bond strength was recorded using an ultra tester machine.

Results

No significant changes in the shade were observed for teeth immersed in water, but the three dietary components had a variable change in the shade of the teeth for both metal and clear brackets after four weeks of immersion. Metal brackets had a lower shear bond strength compared to clear brackets where the difference was statistically significant ($P=0.01$).

Conclusion

Dietary components affect the color stability of teeth and that clear brackets had significantly higher shear bond strength than metallic brackets after four weeks of immersion.

INDEX



**GRADUATE & PROFESSIONAL
STUDENT RESEARCH FORUM**

2020

2020 Graduate & Professional Student Research Forum

INDEX

Abdalla, Amro	9	Fink-Armold, Andrea	25
Acquah, Alfred	46	Fisher, Dylan	37
Adams, Chelsea	41	Forepaugh, Chris	84
Ali Rodriguez, Rachel.....	25	Foult, Corey	120
Alver, Amalie	108	Fusco, Anthony	124
Amato, Victoria	88	Garcia, Ariana	47
Anderson, James	12	Gavrilova, Elena	72
Andrews, Johanna	55	Gillis, Taylor	7
Aquino, Elaine	28	Gilmore, Heather	84
Arshad, Rosnidar	48	Ginovsky, Matthew	99
Avedesian, Jason	117	Gonzales, John	101
Barker, Jeffrey	27	Gonzalez, Kimberly	22
Bataller, Santiago.....	88	Graff, Lucas	59
Batra, Kavita	107	Guerin, Dylan	90
Bejinariu, Alexa	86	Han, Wenjia	55
Belding, Jeffrey	95	Hasnat, Ariful	101
Belisle, Linsey	30	He, Fengjie	21
Benedict, Laura	65	Heisler, Brianna	52
Binesh, Nasim	52	Hernandez, Jeanette	53
Borgia, Brianne	113	Hernandez- Johnson, Monica	44
Brown, Joseph	111	Hightower, Andromeda.....	46
Bugayong, Adrienne	89	Huang, Bright	102
Buhler, Cody	119	Hussain, Abid	18
Bustos,Angelica Jane	111	Isaacs, Michael	11
Chan, Doris.....	109	James, Jeremy	121
Chao, Emma	22	James, Lucas	5
Chato, Lina	96	Johnson, Roy	37
Chen, Yen-Ling	75	Kachen, Sheen	82
Choi, Sinyong	82	Kajjumba, George William.....	102
Chon, James	119	Kaya, Erdogan	60
Clark, Jennifer	89	Kazemeini, Monia.....	97
Clouse, Stacey	30	Keen, Jaclyn	32
Contreras, April	80	Kelly, Devin	113
Coulter, Luke.....	41	Kha, Cindy X	3
Coyner, Michelle	63	Khodabandelu, Ali	15
Craig, Lyndsey	65	Khumnark, Matthew	79
Crew, Lauren	80	Kimball, Jennifer	53
Danquah, Philip	107	Kourtesi, Demi.....	73
Darr, Spencer	42	Kulhanek, Kristy.....	73
Davis, Dustin	13	Kuwabara, Hana.....	77
Demirciftci, Tevfik	72	Lai, Dengxun	90
DeVore, Deena	83	Leisgang, Amanda	117
Dickey, Lauren	10	Li, Chengcheng	45
Dudinskaya, Tanya	83	Lim, Boram.....	114
Edalgo, Aislin.....	66	Lim, Rebecca	12
Eldemerdash, Nadia.....	31	Loan, Leisa	39
Elizan, Bridget.....	3	Longhurst, Jason	116
Eshgian, Nareh	120	Longoria, Bridget.....	51
Fathi, Medya.....	105	Loures dos Santos, Ana Paula	45
Feldman, Anthony	16	Luu, Ngoc.....	17

MacMurray, Nicholas	34	Sam, NT Vivian	91
Maietta, Julia	78	Samentar, Lorena	5
Martin, Nicole	19	Saxe, Carly	110
Mauldin, De'Ana	61	Sertic, Jacquelyn	115
McCaffrey, Dalton	16	Shaikh, Tahir Ali	104
McGlothen, Kendra	27	Sherwood, Samantha	75
McKenna, Joy	4	Shih, Hui-Ting Shih	11
Medrano, Damien	109	Shikrallah, Elizabeth	68
Meighan, Kayleigh	69	Shojaei, Pouya	21
Mendoza, Robin	34	Shope, Megan	79
Messina, Elizabeth	59	Shrestha, Binita	104
Mihy, Julien	114	Singh, Harjiv	9
Mohawk, Kevin	77	Singh, Shekar	98
Mohieddin Rad, Maryam	61	Smith Cox, Shae	56
Molintas, Denise H. R.	74	Socea, Jillian	92
Morgan, Claire	39	Son, Philip	4
Morgan Rueda, Doris	54	Sterbentz, Randy	96
Morris, Audrey	121	Stewart, Jeff	98
Mosallaei, Sheila	6	Strong, Michelle	71
Nave, Karli	26	Stucki, Karolyne	74
Nelson, Nicholas	91	Suresh, Varsha	54
Núñez, Vanessa	32	Swafford, Alina	115
Ochoa, Eric	122	Taylor, Jeffrey	66
Olawepo, John	108	Taylor, Rylee	33
Ortiz, Andrew	78	Thies, Samantha	86
Ostwald, Amanda	18	Thomas, Nicole	47
Ozuna, Jacob	122	Thompson, Heather	60
Parry, Lauren	19	Tiwari, Binayak	97
Pelletier, Robert	7	Trejbalo, Tereza	85
Perez, Daniel	67	Turman, Cecilia	62
Pettit, Alesha	67	Turner, Erin	40
Phan, Jacqueline	13	Uy, Kriztine Mae	123
Poudel, Usha	103	Van Alstyne, Benjamin	68
Rafferty, Michael	123	Varre, Mathew Sunil	116
Reed, Shon	31	Villacastin, Anne	92
Reese, Laurence	38	Wells, Sarah	48
Reyes, Jorge	95	West, Matthew	33
Rezaei, Ghazal	6	Whalen, Haley	124
Rodriguez-Campo, Marcela	44	Willis, William	69
Rogers, Erick	71	Wirt, Ryan	26
Rosales, Daynee	40	Wolfe, Brooke	35
Ross, Nicholas	10	Woods, William	49
Rusk, Brandon	85	Wynne, Tamara	93
Saedi, Yasaman	103	Yesilyurt, Ezgi	62
Saher, Rubab	17	Yoo, Ahreum	110
Sakhakarmi, Sayan	15	Zhang, Huiying	51
		Zhao, Yihong	23

A full digital version of the Research Forum abstract booklet is available at:
<http://gpsa.unlv.edu/forum/>



For the most recent version of the 2020 GPSA
Forum Abstract Booklet, please scan this barcode
with your phone camera:

