

Symposium 2017 Poster Presenters

Each Poster Presenter is listed below, along with a title and abstract of their project.

- **Vu, Do *"Asian Vs American Food Choices of Asian Millennials in the US: Cultural Identity or Health Goals?"***
 - In prior research on general immigrants in the US, perceived ethnicity and acculturation play an important role in influencing Asian immigrants' ethnocentrism towards the US, which in turn affect their attitudes and behavioral intentions towards products made in this country of immigration (Kittichai (Tu) Watchravesringkan, 2011). In regards to food products, one's cultural identity has a mutual effect on the choices of the immigrants (Caplan, 1997). Our work specifically investigates the influences of cultural connection in combination with health goals on food choices of Asians within 20 – 36 years old in the US. We first assumed that activating cultural identity may increase willingness to pay for Asian (vs. American) foods; surprisingly, activating health goals may increase willingness to pay for American (vs. Asian) foods.
- **Zenner, Kelli *"Understanding Gender Fluidity"***
 - Gender has traditionally been understood as binary in America. Academic research is unable to keep pace in this area; however, mainstream media has amplified this understanding. Gender fluid refers to an individual who is not confined to a set of gender norms or specific sexual orientation. Gender fluid individuals may choose to identify differently on various days or fall somewhere in the middle of the binary gender spectrum. The focus of this study is to comprehend what gender and sexuality mean to gender fluid individuals. Ten participants completed a qualitative survey that was administered through Facebook. The participants responded to questions about their experiences as gender fluid and factors that influenced their gender expression and sexual orientation. Sixty percent of the participants have considered taking hormone therapy or transitioning. Multiple participants discussed positive support from the lesbian, gay, bisexual, transgender, queer, plus community as a result of identifying as gender fluid. Participants also discussed various risk factors, such as, bullying, deteriorating mental health, and invalidating interactions with others due to their physical appearance.
- **Jones, Alison *"HEARTS empathy training: The role empathy plays between healthcare providers and sexually traumatized patients"***
 - Providers' communication with patients that occur in Emergency Rooms or during doctor's visits could potentially serve some unique non-medical purposes, such as emotionally supporting and empowering victims of sexual trauma, identifying and counseling sex trafficking victims, and information-gathering and sharing with law enforcement and social service providers. However, studies have shown that too often such opportunities are missed (Chang et al., 2008; Dovydaitis, 2010; Kothari & Rhodes,

2006). Building on Larson and Yao's (2005) work on clinical empathy, the HEARTS Empathy training encompasses topics of clinical empathy, patient provider communication dynamics, clinical indicators and communication do's and don'ts, as well as communication barriers including boundary issues.

- **Bauer, Stephanie "Work-Life Balanced Culture, Work Flexibility, and Inducements: Impact on Perceived Organizational Attractiveness and Job Pursuit Intention"**
 - Organizational attractiveness is a very important concept for organizations that aim to attract qualified employees. Several factors contribute to the overall perceived organizational attractiveness that an individual holds towards a company. Positive perceptions of organizational attraction are strongly related to job pursuit intention. An individual may perceive an organization to be attractive, but not have any desire to pursue a position at that organization for one reason or another and vice versa. Organization attraction is an attitude towards an organization and job pursuit intention is a behavior intent to pursue a position within an organization. These two factors can be affected by several benefits offered by an organization. For example, a culture supporting work-life balance is a benefit that many employees find attractive, as it allows them to have the flexibility to spend valuable time with both their family and at work.
- **Rahmani, Paniz "The Primary Isotope Dependence of Secondary Kinetic Isotope Effects at Various Positions in Solution Hydride Transfer Reactions"**
 - This proposal aims to understand the quantum tunneling mechanism in hydride (H)-transfer reactions in solution. Previous studies have shown that the transferring primary (1o) H isotope substitution with deuterium (D) affects the kinetic isotope effect (KIE) at the in-place secondary (2o) H/D positions, i.e.; the 2o KIE is inflated and more in H-transfer than in D-transfer. This has been explained in terms of an H-tunneling mechanism and the 1o/2o H coupled motions model. This model is, however, not able to justify the deflated 2o KIEs in D-tunneling observed in other systems. Recent explanation uses the concept that the donor-acceptor distance (DAD) at tunneling ready state (TRS) is longer in H-tunneling than in D-tunneling. The shorter Donor-Acceptor distance creates spatial crowding effect that solidifies the 2o-H vibrations and decreases the 2o KIE. This brings on a novel research direction that analyzes how structure affects the 1o isotope dependence of 2o KIEs and how this dependence provides information about the structure of the TRS. The hypothesis is that H- and D-tunneling have TRS structures which have different DADs, and prominent 1o isotope effect on 2o KIEs should be observed in sterically hindered tunneling systems. Our group has designed several hydride-transfer reactions to investigate the hypothesis and results substantiate the hypothesis. Our group's previous research focused on the 1o isotope effect on the 2o KIEs at the position near the reaction center. To further investigate the hypothesis, this proposal studies the 1o isotope effect on the 2o KIEs at the remote positions in hydride transfer reactions in solution.
- **Omran, Anahid "Synthesis of N-functionalized chiral 3-hydroxyphenylpyrrolidines and their evaluation as selective D3 receptor ligands"**

- Dysfunction of dopaminergic receptor signaling in the brain is a hallmark of a number of neurodegenerative pathologies. Of the five dopamine receptors, the D3 subtype has emerged as a promising target for treating neurodegenerative diseases, especially Parkinson's disease, due to the specific distribution of this receptor in limbic and nigrostriatal brain regions known to be associated with motor functions. Not only have D3-selective agonists shown positive effects in re-establishing control of motor activity in animals, but they also display neuroprotective activity and may be important in reducing the dyskinesia side-effect often seen with current non-selective dopaminergic therapies. Herein we report the extension of our previous studies of racemic 3-hydroxyphenyl pyrrolidines to their chiral analogues. We have used our best racemic D3 ligand, N-nonyl-3-hydroxyphenyl pyrrolidine 1 ($K_i = 13$ nM), as starting point. Synthesis, characterization and D3 receptor affinity of both the R- and S-enantiomer of 1 will be reported. In addition, we will describe SAR studies of new chiral N-functionalized-3-hydroxyphenylpyrrolidines (based upon the steric requirements of compound 1) in which the N-substituent has been designed to engage key residues in the secondary binding site of the D3 receptor to enhance affinity and selectivity.
- **Moldenhour, Levi "Culturally Responsive Instruction: A Study of Pre-Service Student Teachers"**
 - As reported by New York Times bestselling author Paul Tough, the United States reached an educational milestone in 2013. He writes, "For the first time, a majority of the country's public school students fell below the federal government's threshold for being 'low income.'" With the majority of students in the nation's public schools now deemed "low income," the fundamental mission of American public schools is to help poor kids succeed (Tough, 2016, p. 1). The importance of this new mission lies not in its potential, but in what it has failed to do in the preceding decades. Poor, minority students "who tend to look different than their teachers" now comprise more than half of the American school system. For decades, these students have been plagued with poor academics and even worse standardized test scores. The reformation of this matter has solely focused on students and their families "What are they doing wrong? Why don't they get out of poverty? Why don't the students just try harder? Over the last few decades, reform efforts aimed at blaming the students and shaming their families have failed to yield any academic improvements. What if, however, the lack of academic achievement is not an issue of the students or their families, but of the quality of teachers which these students are given? Using the framework of Culturally Relevant Pedagogy and Culturally Responsive Teaching, the research undertaken in this study has made it abundantly clear that pre-service student teachers are not prepared to teach students who come from diverse, underprivileged, and at-risk backgrounds.
- **Minaeian, Mahsa "Synthesis and SAR Studies of Somatostatin Subtype-4 Agonists for the Treatment of Alzheimer's Disease"**
 - Alzheimer's disease (AD) is the most common form of dementia and affects an estimated 35 million people worldwide. Current medications approved for the treatment of AD (acetylcholinesterase inhibitors and NMDA antagonists) are only palliative and do

not change the course of disease progression. Thus, new therapeutic strategies that are disease modifying are desperately needed. In addition to strategies which prevent the formation of ABeta-derived pathologies, pathways which can enhance the degradation of ABeta oligomers and peptides are particularly exciting. The neuropeptide somatostatin is known to enhance the degradation of ABeta in the CNS through the downstream up-regulation of the endopeptidase neprilysin. Unfortunately, somatostatin levels in the CNS are significantly lowered in the aged and in AD patients. To this end, selective somatostatin subtype 4 (SST4) agonists represent a novel class of therapeutic candidates for treating AD. Herein we report lead identification and initial optimization studies of a novel and druggable class of small molecule SST4 agonists that rescue learning and memory deficits in transgenic mouse models of AD through this potential disease-modifying mechanism of action. Synthesis, characterization, physiochemical properties, receptor binding/selectivity, receptor activity/function and in vivo proof of concept studies will be described.

- **Adkisson, Emma *"Cultural Ideologies in Feminine Hygiene Advertising"***
 - This quantitative content analysis examines the marketing of gender expressions to women through feminine hygiene product advertising. This study aims to expose a connection between advertising tactics and the reinforcement of social order around menstruation. In this analysis, 49 unique advertisements for feminine hygiene products were collected from 5 popular women's magazines. These findings show a decrease in the use of scientific and athletic marketing tactics, an increase in the use of "protection" features, and an increase in the inclusion of women in the advertisements of these products.
- **Chen, Xueqi *"Popularity Of Foreign Brand Posts In China: An Investigation"***
 - This study examined how foreign brands are trying to connect with local consumers using social media in China by analyzing 10 foreign brand posts on Weibo from February 1, 2015 to October 31 during 7 Chinese traditional festivals. A total of 140 brand posts was gathered. By using quantitative content analysis and correlations method, this study explored the relationship between three Chinese cultural elements (Chinese characters, local celebrities and traditional visual images) and the number of retweets, comments and likes on foreign brand post. The influence of Chinese cultural elements on popularity of foreign brand posts were discussed as well.
- **Sahin, Deniz *"Integration of Production Systems in Small and Medium Sized Companies: Creating a Cost-Effective and Easily Implementable System"***
 - Enterprise Resource Planning (ERP) systems play an important role in the integration of all processes of a company that wants to thrive in a business world. Although there is a great amount of advantages that come with an ERP system, it is usually difficult to implement, it involves high costs and there are many failure risks involved. The primary focus of this research is to discuss the two main problems, high costs, and implementation difficulties, that generally plague Small and Medium Sized Enterprises (SMEs) and proffer alternative cost-effective solutions to these problems. For the sake of analysis and

validation, the research is accomplished through a case study of a Six Sigma project made in a furniture company (Nurus Co.), founded in Ankara, Turkey. It is conducted in four main sections: (1) Introduction and Literature Review, (2) Case Study, (3) Results, and (4) Conclusion and Future Work.

- **Von Holst, Haley *"Students' Reports of Parents' Leadership Styles: Differences Between African American and European American Students"***

- Two studies examined how young adults rated their parents' leadership styles during the students' childhood years. A Ferguson parental values inventory (PVi) (Ferguson, Hagaman, Maurer, Mathews, & Peng, 2013) was given to Midwestern university students in 2011 and in 2016. Data were analyzed to assess if ratings differed according to the students' ethnicity/culture. A significant interaction was found between ethnicity/culture and reported parenting styles in both the 2011 and 2016 studies. African American (AA) and Euro American (EA) students reported comparable Democratic parenting style in rating their mother and their father, but AA students overall reported more Autocratic, Laissez Faire, and Competitive styles than did EA students, and this was especially noted in the styles rated for fathers. The consistency between the 2011 and 2016 studies supports data reported in the literature that ethnicity/culture of parents significantly affects what styles they use for raising their children.

- **Mazgaeeen, Lalita *"Utilization of nanoparticles for effective down-regulation of target gene transcripts in the highly DDT-resistant 91-R strain of Drosophila melanogaster"***

- Double-stranded RNA (dsRNA) has been widely used to down-regulate transcription of the targeted genes in many organisms including insects. Two techniques, feeding and injecting dsRNA, have been commonly employed to treat insects for functional validation of genes because of the simple and easy manipulations with satisfactory efficiencies of suppressing gene expression. However, these approaches often failed to produce anticipated down-regulation of the target genes in *Drosophila melanogaster*. To investigate the effect of nanoparticle-dsRNA complexes, female flies were treated with polymeric nanoparticles [e.g., chitosan, polyamidoamine dendrimers (PDN), and PDN-selenium (SN)]-dsRNA complexes and knockdown bioassays were performed using the DDT coated vials (1mg/vial). The highly DDT-resistant 91-R female flies fed with chitosan-SN-Mrp1 dsRNA, PDN-SN-Mrp1 dsRNA, chitosan-Mrp1 dsRNA showed significantly increased knockdown sensitivity (KS) (54.0, 45.39 and 43.21%, respectively), compared to those flies fed with nanoparticles-Rp49 dsRNA. Also, adult females treated with PDN-Cyp4g1 dsRNA, PDN-SN-Cyp4g1 dsRNA and chitosan-SN-Cyp4g1 showed significantly increased KS (49.88, 40.27 and 27.24%, respectively), compared to those flies treated with PDN-Rp49, PDN-SN-Rp49 and chitosan-SN-Rp49 dsRNAs, respectively.

- **Fadamin, Arghavan *"Electrochemical and Spectrochemical Investigation of the Schiff-Base complex, Ru(No)(Saloph)Cl"***

- Synthesis, Characterization and Electrochemistry of the Ruthenium Schiff Base complex [(Saloph)Ru(NO)Cl] (H₂Saloph = 2,2'-[1,2-phenylenebis(nitrilomethylidyne)]bis-phenol)
- Arghavan Fadamin, Michael Shaw

The behavior of 5-coordinate (heme)Fe(NO) species is of tremendous biological importance, as these species are implicated in the production and management of the physiological regulator molecules NO and HNO. A limitation of the use of (porphyrin)Ru(NO) analogues as models for these iron-heme species is the preference of Ru for octahedral-6-coordination, while the Fe species tend to be 5-coordinate square pyramidal, although not exclusively so. Recent work in the Shaw group indicates that (porphyrin)Ru(NO)Cl species experience tremendously enhanced lability of the chloride ligand following reduction. This work has been expanded to the non-heme Schiff base scaffold in order to characterize structure vs. reactivity trends not possible when working with porphyrins alone. The results of electrochemical and spectroscopic studies are presented.

- **Ali, Md Yousuf *"Insects treated with sub-lethal amounts of ivermectin produced increased levels of reactive oxygen species and malondialdehyde in their ovaries"***
 - Reactive oxygen species (ROS) are known to be elevated under insecticide induced stress in insects. ROS, such as superoxide anion radicals, are converted by superoxide dismutase to hydrogen peroxide, which then pass out of the mitochondria and endoplasmic reticulum. Hydrogen peroxide is, then, readily diffused into cell nucleus and converted into hydroxyl radical which is known to mutate DNA. If this event happens in germ cells, this mutation can be inherited and involved in evolution of resistance. Using the glass vial contact method, a dose dependent mortality response (LC50 = 0.001%) was established following 72 hours of ivermectin exposure to determine sub-lethal concentrations of ivermectin under the laboratory bioassay conditions. After ivermectin exposure, levels of hydroxyl radicals in fly ovaries was determined using a fluorescent probe (Hydroxyphenyl fluorescein). The levels of hydroxyl radicals in ovaries of ivermectin treated flies was significantly higher than the level of hydroxyl radicals in ovaries of untreated control flies ($p < 0.05$) for six selected sub-lethal concentrations in the range between $1 \times 10^{-6} \%$ - $1 \times 10^{-1} \%$. A dose and time dependent increase of hydroxyl radicals was determined by the regression analysis using Ancova ($p < 0.05$). The levels of malondialdehyde (MDA), a lipid peroxidation product induced by increased hydroxyl radical, were measured by thiobarbituric assay. A time dependent accumulation of MDA was determined by the regression analysis using Ancova ($p < 0.05$).
- **Mincy, Callie *"Salivary gland cancer cells uniquely re-express cell adhesion molecules."***
 - The extracellular matrix (ECM) is a complex meshwork of highly cross-linked proteins that are secreted by cells, providing support and anchorage for the very cells that secrete it. The cell-matrix interactions are not limited to mere attachment, but serve as conduits for various signaling pathways that can regulate proliferation, survival, migration, and differentiation. In normal cells, cadherins form transmembrane, intercellular adhesion molecules. In cancer metastasis, cells lose cadherins, resulting in increased ability to migrate away from the primary tumor. We hypothesize, that although SG cancer cells lose their cadherin interactions from the primary tumor, the migrating cancer cohort overexpresses cadherin to enhance "stickiness" as they metastasize, and may be mediated through the cancer ECM/matrisome. Normal human SG cells (HSG) and human

SG cancer cells (HTB-41) were maintained in a 5%CO₂ atmosphere at 37°C. Normal HSG cells were seeded on the ECM of cancer cells. E-cadherin, n-cadherin, and β -catenin were localized, and western blotting was performed. Experiments were repeated in triplicate. There was a loss of intercellular e-cadherin expression, increased n-cadherin, and decreased β -catenin under the influence of the cancer ECM. The cancer ECM significantly altered the cytoarchitecture of normal SG cells to a more migratory morphology, and this seems to be a transient state before cancer cells begin to re-express significantly increased e-cadherin and β -catenin. This re-expression of adhesion molecules seems to facilitate cancer cell cohorts to exhibit homogeneity and cohesiveness in order to migrate and invade into surrounding tissues during SG cancer progression and metastasis.

- **Josephs, Molly "The relationship between self-control and health, academic and athletic behaviors among NAIA athletes."**
 - Self-control is an individual's ability to control and plan their actions and behaviors to achieve personal goals (Brown, Miller & Lawendowski, 1999; Zimmerman, 2000) Previously research has indicated that college students' self-control is associated with their nutritional choices (Redden & Haws, 2012), study habits (Tangney, Baumeister & Boon, 2004) and persistence at physical exercise routines (Dorris, Power & Kenefick, 2012). The purpose of this study was to evaluate the relationship between self-control and a variety of health, academic and athletic behaviors among collegiate athletes. The sample consisted of 385 National Association of Intercollegiate Athletics (NAIA) collegiate athletes (M age=20.32 \pm 1.17). Data were collected via online questionnaires. Pearson correlations were conducted and revealed significant, positive correlations between self-control and academic performance ($r = .13-.23$, $p < .05$), fruit and vegetable consumption weekday consumption ($r = .12-.13$ $p < .05$). Significant, negative correlations were found between self-control and athlete burnout ($r = -.28-.29$, $p < .01$) and alcohol consumption ($r = -.16-.35$, $p < .01$). The results indicate that NAIA athletes with better self-control have higher GPAs, consume more fruits and vegetables, less alcohol and experience less burnout in athletics than athletes with lower self-control. Future research needs to prospectively assess how self-control influences academic, health and athletic behaviors over the course of academic semesters. Prospective data may serve to identify if and when athletic departments need to implement self-control interventions as a means to promote positive health, academic and athletic outcomes among NAIA student-athletes.
- **Conway, Sara "Discovering Theory Digitally: Teaching HBSE with Integrated Platforms"**
 - This poster will present a digitally integrated curriculum design to teach Human Behavior in the Social Environment (HBSE). There are a number of digital platforms that can be used to enhance instruction. These platforms stretch across the time continuum and include traditional, time-honored, formats such as movies (i.e. film) to more contemporary interactive interfaces such as blogs, discussion forums, multimedia web lectures and video content. This poster will highlight successes and challenges of using these platforms in an undergraduate HBSE and human development course. The poster will also present student receptivity, digital literacy, digital comfort, and perceptions of

how this integrated digital instructional model contributed to learning outcomes. For this HBSE course, students applied theory to character cases from selected movies. They used online group discussion forums and blogs to engage in conceptual analysis and continued dialogues outside of class. The Group work approach was important as it encouraged critical thinking and rationale for implementation of theory (Teater, 2010). Asynchronous web lectures gave students ongoing access to lecture content and student created videos offered a space for creatively share learning outcomes. While there were a number of benefits and challenges to integrating these digital platforms to teach HBSE and while students reported mixed reviews of ease of use, they indicated that this integrative instructional method was engaging, incited creativity, and relieved perceived discomfort they felt about learning theory.

- **Klann, Megan *"The Comparison of Student Performance Between Flipped Classroom and Traditional Teaching Approach"***
 - Flipped classroom is a hybrid educational format that shifts guided teaching out of class, thus allowing class time for student-centered learning. Although this innovative teaching format is gaining attention, there is limited evidence on the effectiveness of flipped teaching on student performance. We compared student performance and student attitudes towards flipped teaching with that of traditional lectures using a partial flipped study design. Flipped teaching expected students to have completed pre-class material such as assigned reading, instructor-prepared lecture video(s) and the PowerPoint slides. In-class activities included the review of difficult topics, a modified team-based learning (TBL) session and an individual assessment. In the unflipped teaching format, students were given PowerPoint slides and reading assignment before their scheduled lecture. The class time was dedicated to podium-style lecture which was captured in real-time and was made available for students to use as needed. Comparison of student performance between flipped and unflipped teaching showed that flipped teaching improved student performance by 17.5%. This was true of students in both the upper and lower half of the class. In fact, the lower 50% of the class showed greater improvement from flipped teaching than the students in the above 50th percentile. A survey conducted during this study indicated that 65% of the students changed the way they normally studied and 69% of the students believed that they were more prepared for class with flipped learning than in the unflipped class. These findings suggest that flipped teaching combined with team-based learning is more effective than the traditional lecture.
- **Wright, Dallas *"Synthesis of Potential Halopyridine Based Inactivators of Dimethylarginine Dimethylaminohydrolase"***
 - Nitric oxide (NO) is an important gaseous molecule in the human physiology. NO has multiple functions within the body to maintain homeostatic relations. In particular NO is used an immunological response element as well as a critical factor cardiac and vascular function. Poor regulation of NO levels can result in multiple disease states such as cardiovascular disease in shortage of NO and high concentrations of NO are known to cause cancer. This means that control of NO production is important which gives potential to the development of NO regulators. It is known that asymmetric dimethylarginine

(ADMA) is an endogenous inhibitor of nitric oxide synthase (NOS). ADMA levels are controlled by dimethylarginine dimethylaminohydrolase (DDAH) which metabolizes ADMA to citrulline and methylamine. The goal of our research is to develop inhibitors that are similar in structure to ADMA to down regulate the expression of NO from NOS. In addition the inhibitor in development should contain a click chemistry region to act as a probe for detection of DDAH binding.

- **Aldawish, Abeer *"Using Incremental Rehearsal to Improve Fluency of Sight Words with Children with Learning Disability"***
 - The purpose of this study was to evaluate the effectiveness of using Incremental Rehearsal to improve the ability to read sight words for two elementary students diagnosed with a specific learning disability. The research question in this study was what is the effect of Incremental Rehearsal (IR) on sight word fluency for children with a learning disability? A casual design was used to evaluate the effect of the Incremental Rehearsal intervention on the dependent variables (sight words fluency).
- **Alexander, Jaydn *"Efficacy of Multicultural Training for Mental Health Professionals Working with Native American Populations."***
 - The purpose of the research involves assessment of current multicultural training practices for mental health professionals working with Native American populations. The study will consist of facilitating a focus group immediately following a training conducted by an art therapist. The training is on implementation of an arts-based neurobiological trauma curriculum to teachers working in schools located on a tribal reservation. A follow up conference call will be implemented to offer continued support of the trainees as well as to assess the successful implementation of learned skills and goals achievement. This will be a collaborative project working with other researchers in the Art Therapy field.
- **Ashek, Akhand Mahmood *"Reliability of a participatory sensing system in transportation engineering"***
 - The idea of Participatory Sensing Systems (PSS) is relatively new in the transportation sector. Such systems collect real-time data from active road user's GPS-equipped smartphones or cars and a central server then provides important traffic information to its users. As the data is provided by the general road-users and third parties, the reliability of this information is very important. Reliability depends on the accuracy, availability, and timeliness of the information. This paper investigates the reliability of a participatory sensing system based navigation app ~Waze™. For this purpose, the researcher selected road construction and maintenance work because it is scheduled work and information related to the work is reported to the public in advance. The geographical focus of this study included interstate freeways in the City of Saint Louis, Missouri (MO) and adjacent areas. The presence of construction activities was verified by Missouri Department of Transportation's (MoDOT) traffic cameras installed along the freeways. After, analysis the researcher found the system to be 82.18% accurate which is very close to the federal requirements.

- **Cozad, Rani "A Grant Proposal to Implement Trauma-Informed Art Therapy Programming with Women in Substance Abuse Treatment"**

- This grant proposes the implementation of a new trauma-informed group and individual art therapy program, the Art Therapy Connections program, at Queen of Peace Center in St. Louis, Missouri. Queen of Peace Center (2015) is a "family-centered behavioral healthcare provider for women with addiction, their children and families". This facility provides, "a gender focused female recovery center provides a variety of treatment options to women with co-occurring disorders and those affected by trauma" (Queen of Peace, 2015). A literature review shows that art therapy can be beneficial for individuals in substance abuse recovery and can facilitate healing for women with histories of trauma. Seeking Safety is a manualized treatment, currently utilized by Queen of Peace Center for reducing substance use and trauma-related symptoms (Najavits, 2002). The goals of the Art Therapy Connections program are to: implement individual, short-term, and full-length group art therapy sessions focused on reducing trauma symptoms and substance use; and to implement the Seeking Safety treatment model in the art therapy groups. This writer is a current art therapy and counseling intern at Queen of Peace Center facilitating groups and individual sessions for adult women. This grant proposal will fund a new position for a full time art therapist who will be responsible for facilitating individual sessions and a closed group for women with histories of trauma. The total two-year proposed budget for the Art Therapy Connections program is: \$93,252.93.

- **Delgado, Veronica "Wounded Healers in Art Therapy: A Grounded Theory Exploration"**

- This Grounded theory research project is examining the intersections of wounded healer archetypes in art therapy, vocation choice, and stigma. The researcher interviewed 6 participants who meet the criteria for wounded healer art therapists. Interviews were then transcribed and analyzed according to emergent themes. The researcher designed questions for semi-structured interviews to capture the experience of wounded healer art therapists including first identification as a wounded healer, positive and negative experiences, disclosure of woundedness and/or wounded healer status, etc. . Seven themes emerged from the data: (a) Personal history of loss, trauma, or diagnosis, (b). Stigma and disclosure, (c) added layers of insight, (d) Public "coming out", (e) Peer supervision/support, (f) Something positive from the experience/giving back and (g) Interest in the project beyond individual participation. Based on the data and analysis this researcher proposes that wounded healer literature is reflective of the experience of the wounded healer art therapist with the additional theme that art therapists specifically are engaged in creative activities such as art making and imaginary play from childhood throughout their lives.

Keywords: wounded healer, art therapist, stigma, grounded theory

- **Hershkowitz, Richie "Effect of Perinatal Blockade of Androgen Receptors on Estrogen Receptor- Levels in Specific Brain Regions and Spatial Working Memory in Male Rats"**

- Sex differentiation of the male rat brain occurs during the perinatal period (four days prior to and four days after birth) in the presence of testosterone (TS) which serves as a prehormone and gets metabolized to either 17 β -estradiol (E2) or dihydrotestosterone

(DHT). E2 exerts its effect by binding to estrogen receptor (ER- and ER- β) and DHT to androgen receptor (AR). Both ER and AR are shown to be important in the sexual differentiation of the brain. ER- is expressed in the hypothalamus, amygdala, and hippocampus in greater amounts and is associated with memory and sexual behavior. Whether blockade of AR during the perinatal period modulates the concentrations of ER- in the adult brain and, in turn, affects spatial working memory (SWM) was tested in this study. Two timed-pregnant Long Evans rats were administered Flutamide (20mg/kg; SC) or vehicle during the last four days of pregnancy. Ten mg/kg (SC) of flutamide or vehicle was given to the newborn male pups for an additional four days. We tested SWM in these male rats when they reached postnatal day 65 and found that flutamide treatment improved SWM compared to control animals. At the end of the behavioral study, these animals were sacrificed and trunk blood was collected to measure serum E2 and TS levels. We found that the behavioral changes were associated with elevated serum E2 and reduced TS levels. The hypothalamus, amygdala, and hippocampus were isolated from the frozen brain tissue and ER-protein levels were measured using chemiluminescent western blots. Flutamide-treated group showed an increase in ER- levels in the hypothalamus and the amygdala whereas concentrations in the hippocampus was decreased. Our results suggest that the increased ER- levels in the hypothalamus and amygdala along with increased serum E2 levels appear to improve SWM.

- **Hinderliter, Emily "The Importance of Sex Education for Art Therapists in Order to be More Culturally Competent"**
 - Sexuality is often a taboo subject in our society that can cause shame and embarrassment for some. Therapists are not exempt from this feeling, yet, where is a person supposed to turn to when they experience sexual dysfunction, questions about their sexual orientation or gender identity, or fears related to sexual trauma? In my research, I integrate the ideas of sexuality education, art therapy, and cultural competency in order for therapists to be able to openly and comfortably talk to their clients about the importance of this basic biological function.
- **Iverson, Jeffrey "The Mechanism of Calmodulin-Induced Endothelial Nitric Oxide Synthase"**
 - Calcium ion (Ca²⁺) is the most abundant mineral ion in humans, which influences a number of signaling and metabolic reactions. Among them, the signal molecule nitric oxide (NO) produced by endothelial NO synthase (eNOS) plays important roles in vascular relaxation, cell division, cell death, and fertilization. eNOS activity is regulated through a Ca²⁺ sensing protein, calmodulin (CaM). eNOS is highly expressed in cell caveola structures, which is mainly formed by caveolin protein (Cav), and its NO production is inhibited in this state. Ca²⁺-bound CaM appears to restore eNOS activity by replacing the Cav protein's inhibitory effect. However, the mechanism is largely unknown. Here, we confirmed that eNOS activity is inhibited by higher concentrations of Cav using hemoglobin assay, and complex formation of eNOS/Cav was studied by using surface plasmon resonance (SPR). To investigate this Ca²⁺ dependent mechanism, we have constructed several fluorescent calmodulin proteins that allows us to 1) determine Ca²⁺ concentrations using fluorescence assay, 2) obtain binding thermodynamics and kinetics

of binary eNOS/Cav and eNOS/CaM complex, and 3) assess ternary eNOS/cav/CaM complex. The expression/purification and fluorescence properties were presented and the approaches are discussed. Our anticipated results will reveal the biochemistry for the activation of eNOS, which in turn provides important means to understand diseases caused by eNOS malfunction.

- **Lama, Norsang *"Bone cancer pattern recognition in thermographic image using support vector machine"***
 - The use of thermography in both human and veterinary medicine has increased in recent years because of its non-invasive nature. It provides a fast, pain-free, portable and real-time imaging system. Thermography based computer vision has the potential to detect abnormal thermal patterns caused by various diseases. In this study, we applied support vector machine (SVM), using co-occurrence matrix based texture features to detect thermal abnormalities of bone cancer. The experiment was conducted using thermographic images of elbow/knee of 41 canines, irrespective of their age, sex, and breed. The images included 20 disease and 21 non-disease cases. The normal and abnormal patterns were analyzed using pattern recognition methods in two steps: feature extraction and pattern classification. Texture descriptors based on co-occurrence matrices were computed to extract the thermal pattern information from the images. The extracted feature set was used as input to the SVM to differentiate abnormal patterns from normal patterns. To evaluate the classification performance, leave-one-out cross validation was performed. The verification results showed that the SVM with a Gaussian kernel gave the best classification result with an accuracy of 87.80%, a sensitivity of 90.00%, and specificity of 85.71%. This result indicates that SVM has the potential to classify bone cancer patterns in thermographic images and can be used as a pre-screening tool in veterinary medicine.
- **Mills, Jessica *"Catherine's World: No Saint is an Island"***
 - Catherine of Siena, a 14th-century saint, penetrated the Italian political scene ranging from local politics to the papal seat of Pope Gregory XI. Scholars have depicted her success as a living saint on her relationship with her confessor, Raymond of Capua. However, through analysis of her letters and background texts, it is clear that Catherine created a network of families and individuals even before she met Raymond in 1374. To what extent did this network that she actively created contribute to her success as a public figure in medieval Italy? What impact did this group of people have on Catherine and what impact did Catherine have on the network of followers? What information can be extrapolated from studying Catherine's letters, hagiography, and testimonial works post-mortem? And, how does Raymond's miniscule presence in the network change our interpretation of the basis of Catherine's success?
- **Newton, Allison *"Analysis of Berberine Bridge Enzyme-like (BBE-like) Family Genes Potentially Involved in Leaf Development"***
 - In plants, the synthesis of isoprenoids and isoprenoid-related compounds such as chlorophyll, carotenoids, tocopherols, phytoalexins, and gibberellins require the

GERANYLGERANYL DIPHOSPHATE SYNTHASE (GGPPS) gene family. In *Arabidopsis thaliana* (At), a point mutation in one member of this family, *ggpps11*, results in rounded, variegated rosette and cauline leaves with irregular margins. The variegation patterning is typically reproducible, with the center of the leaves being albino and the periphery phenotypically wild type. We have compared the transcriptome of wild type, *ggpps11* white sectors, and *ggpps11* green sectors. This analysis revealed a group of twelve Berberine Bridge Enzyme-like (BBE-like) proteins which are differentially regulated between the two mutant tissues. Although At does not produce endogenous berberine, exogenous application of berberine leads to pointy leaves, likely resulting from inhibition of adaxial cell differentiation by berberine, causing the leaf-polarity defects. To identify how these genes are involved in leaf development and polarity, T-DNA lines with individual mutations in the BBE-like genes were identified and obtained as segregating populations from the Arabidopsis Biological Research Center. We have used PCR analysis to identify homozygous mutant lines for all family members except BBE-like23, which appears to be embryonic lethal. We have determined phylogenetic relationships between BBE-like family genes and are using the information to create double mutants between the most closely related pairs. Because *Atbbe28* mutants show reduced salt tolerance and biomass, and BBes in other plants are upregulated in response to stress and pathogenic attack, leaves from bbe-like mutants grown in normal conditions as well as salt, temperature, and light stress conditions will be examined. Leaves will be examined for 1) overall leaf architecture using the open access LAMINA program and 2) leaf vascular architecture through clearing, Safranin staining, and ImageJ analysis.

- **Niloy, Md Toushik Ahmed "Actuated Signal Timing Optimization for a No-Notice Evacuation: A Simulation Study of Residents Near the Phillips 66 Oil Refinery in Wood River, Illinois"**
 - The determination of the appropriate traffic signal timing plan for no-notice evacuation in densely populated areas is a noteworthy challenge because no-notice incidents occur with no advance notice of time and place. At the time of the hazardous events especially at night time, at-risk residents nearby the oil refinery or chemical industry, must be evacuated and sheltered in the safe locations as quickly as possible. In response to this problem, optimize traffic signal timing control could significantly impact on evacuee traffic flow in a no-notice evacuation. This research project focused on achieving the important findings through simulation results in settings traffic signal timings and an evacuation strategy as well which can expedite the no-notice evacuation procedure. A simulation study was constructed based on the City of Wood River, Illinois road network with the traffic signal timing data set from the IDOT. With results generated by the traffic simulation software Synchro 8.0 and VISSIM 7.0, an effective traffic signal timing plan was identified for the optimum evacuation in view of three different simulation scenarios; such as existing traffic infrastructure, flexible shelter choice (scenario one) and the optimizing traffic signal-flexible shelter choice (scenario two). Node raw data (delay, TStopd, stops) in ten intersection nodes and vehicle travel time raw data (travel time, delay time) in four evacuation routes were the comparison elements for these simulation scenarios. Z-test and Chi-square experimental results indicate that scenario two was an optimal selection since scenario two reduced the summation of average travel time along

with all evacuation routes 78% than the existing traffic infrastructure scenario and 48% than the scenario one. Similarly, in terms of delay, scenario two reduced the total delay time approximately 80% along with all evacuation routes than the existing infrastructure scenario and 52% than the scenario one. Using the node raw data in every T-test and ANOVA test, it was also observed that scenario two achieved utmost recognition for the fastest evacuation strategy compare to existing traffic infrastructure scenario and scenario one. This comprehensive evacuation research study suggests to employ longer cycle length in the busiest intersection than the regular operation and providing considerably more green time toward the shelter centers in evacuation time. This simulation study illustrated the effectiveness of the changing traffic signal timing settings according to the evacuee traffic demand and its potential application in the real-world no-notice evacuation.

- **Rodgers, Rachel *"Phylogenomic Analysis of Fundulidae Using RNA-sequencing Data"***
 - Fishes of the New World cyprinodontiform family Fundulidae display a wide variety of tolerance to environmental conditions, making them a model system for comparative, evolutionary, and environmental studies. The lack of a robust and fully resolved phylogeny for family Fundulidae and its most speciose genus Fundulus remains an impediment to future research. This study utilized novel RNA-sequencing data to generate a phylogeny for 16 members of Fundulidae to better refine interspecies relationships. Maximum likelihood and Bayesian analyses generated identical phylogenies with robust statistical support at each node. While many past hypothesized evolutionary relationships were reinforced, several alternative relationships are hypothesized at deeper nodes in the Fundulidae phylogeny, rendering genus Fundulus paraphyletic.
- **Schaller, Megan *"Fish-oils Increase BAMBI Expression to Protect Against Fibrotic Activity in LPS Stimulated Hepatic Tissue"***
 - Non-alcoholic steatohepatitis (NASH), defined as excess hepatic lipid and chronic inflammation, provides an environment prone for the development of hepatic fibrosis. Recent evidence suggests that the antifibrotic protein BAMBI (BMP-Activin membrane bound inhibitor) is downregulated in the presence of inflammation, and may be central to the development of fibrosis. Diets rich in omega-3 (n³-3) fatty acids are known to provide anti-inflammatory effects; however, the effects of n³-3 fatty acids on hepatic fibrosis are not well-established. PURPOSE: To determine the effects of fish-oils on the hepatic fibrosis signaling cascade, following 32-weeks of high-fat feeding in a LPS-induced model of NASH. METHODS: Male C57BL/6 mice were randomly assigned to one of four diets for 32 weeks (n=9/group): low-fat lard based (LFL, 10% kcal fat), low-fat fish-oil based (LFFO, 10% kcal fat), high-fat lard based (HFL, 41% kcal fat), or high-fat fish-oil based (HFFO, 41% kcal fat). Following in situ LPS stimulation, liver mRNA expression of CD14, TLR4, MyD88, BAMBI, and TGF- β 1 was quantified using quantitative RT-PCR. Differences between diets were identified using a one-way ANOVA with statistical significance set at p<0.05. RESULTS: Following LPS stimulation, CD14 was increased 2.5 fold (p=0.020) in HFFO when compared to HFL. Despite the increase in CD14, TLR4 showed no difference

between groups. In contrast, MyD88 was 2.8 fold greater ($p < 0.001$) in HFL compared to HFFO. In comparison to untreated tissue, BAMBI was 1.7 fold ($p = 0.017$) higher in the HFFO LPS-stimulated tissue, which best explained the 1-fold ($p = 0.004$) lower expression of TGF- β 1 in HFFO when compared to HFL post-LPS stimulation. CONCLUSION: Despite the increase in extracellular LPS signaling receptor CD14, the consumption of fish-oils produced a protective intracellular response as observed by an increase in BAMBI and decrease in TGF- β 1. These results suggest that a diet high in n ω -3 fatty acids may protect against the development of hepatic fibrosis.

- **Uddin, Ajim "Testing Herd Behavior in A Frontier Stock Market: The Effect of Regulatory Changes and Global Factors"**
 - The presence of herding behavior and lack of institutional investment culture greatly deters market efficiency in frontier stock markets. Using dynamic, rolling window analysis, this study tests the presence of herding behavior in a frontier stock market, Bangladesh Stock Exchange. While the static model is unable to detect herding over the whole sample period, we observe significant time variation in the estimated herding coefficients with the market switching between anti-herding and herding states. We also find that policy changes have a significant impact on investor behavior, however, do not necessarily contribute to herding. Furthermore, we observe heterogeneous herding patterns across different sectors with the financial sector displaying the greatest sensitivity to country specific factors and policy changes. On the other hand, investor herding in textile and clothing sectors found to be affected by the S&P 500 index and oil returns. Finally, and most importantly, our findings suggest that the stock market in Bangladesh is largely segmented from global risk factors, implying that this frontier stock market can offer significant diversification benefits for global investors.
- **Yanik, Erim "Heat Transfer Analysis for Different Magnet Array Geometries in Domestic Magnetic Refrigeration Systems"**
 - Magnetic refrigeration which is an alternative solution in addressing environmentally-friendly technologies for common household cooling systems. In this study, magnet array assemblies in different geometries for a magnetic refrigerator were simulated considering design limitations such as space and cooling capacity. Circular, hexagonal and octagonal Halbach permanent magnet arrays (HPMA) were studied by using one of the most common magnet group, NdFeB. As a magnetocaloric material (MCM), Gadolinium is selected and its effect on the system was observed. results are compared in terms of magnetic field and heat transfer rate outcomes.
- **Adebayo, Adebanke "Sociocultural Understanding of Miscarriages, Stillbirth, and Infant loss: A study of Nigerian Women"**
 - Miscarriages, stillbirth, and infant loss remain monsters staring Nigerian women in the face, and because of the cultural silence/taboo that typifies these issues, it is customarily under-researched. Drawing on the in-depth interviews of 35 women within the ages of 25-65years old and by creating media (radio) awareness, this study explores the sociocultural understanding of perinatal loss among Nigeria women. Following a thematic

analysis of the interviews, this study found a multilayer ripple effect of cultural silence after a loss. Most significantly is disenfranchised grief, which translates into identity loss, negative body image, marital instability, and a feeling of despair. It is pertinent to underline that aside from the medical effect women are also bedeviled with the psychosocial effects that stem from disenfranchised grief. These findings and alongside the overwhelming request from the media awareness clearly suggests a need for opportunities/mechanisms to facilitate open conversations such as social support interface. Also, to create culturally sensitive awareness, and for healthcare professionals to recognize the culturally unique challenges that might affect the holistic wellbeing of women and not just the absence of diseases.

- **Sakhaee, Farhad *"Sediment Pattern & Rate of Bathymetric Changes Due to Construction of Breakwater Extensions at Nowshahr Port"***

- Erosion, scour and sedimentation are the most common phenomena which should be considered in the design of marine structures. Seas and oceans are dynamic environments, hence gathering more and more information about their bathymetric changes and pursuing their historical evolution could be fruitful in the efficiency and durability of marine structures such as: jetties, groins and breakwaters. To achieve this goal one desperately needs to know about currents and waves and the effects of their interactions. Also one needs to know about the rate of sedimentation (Net Gain), and erosion (Net Loss) in the field. On the other hand to obtain a sufficient depth in order to facilitate marine traffics in the harbors the rate of sediment deposition must be calculated and plan for effective annual dredging programs. In addition creating a calm situation inside the pool of harbor for ships to anchor is needed. Breakwaters will fulfil this duty by damping the energy of waves through diffraction