A Theoretical Integration of Website Quality, Web-Customer Value, Relationship Quality and Web-Customer Satisfaction

Ajay Aluri and Lisa Slevitch
School of Hotel & Restaurant Administration
Oklahoma State University
Subject Area: Social Sciences

The Internet has emerged from an online resource technology to a global media that has become a part of everyday life for many users around the world. The increasing internet penetration rates have transformed the traditional business model to e-commerce and from e-commerce to digital business, also called eBusiness. One of the vital questions in understanding these digital customers today is how to evaluate the customer satisfaction of the web customers? Unlike traditional customer satisfaction, web-customer satisfaction is influenced by various other variables. This fact has laid the foundation for this study, which attempts to fill the gap in the previous body of knowledge by integrating findings from previously published studies and by introducing new constructs into the web customer satisfaction. The objective of this study is to explore and integrate a theoretical model that depicts the variables that may have significant influence on the web customer satisfaction. This study aims to conduct a theoretical integration of website quality, web customer value and web relationship quality in the context of web purchasing and its influence on Web Customer Satisfaction. While this paper explores the conceptual integrated model, an empirical research of this model will be conducted in the future.

Computational Characterization of pH-dependent and Active Site Properties of Cellulases

Olumayowa Azeez and Dr. Jaeju Ko
Scholar Symposium Participant
Scholar from Indiana University of Pennsylvania
Subject Area: Biological Sciences

The biopolymer, cellulose, serves as the chief polysaccharide of the cell wall of plants and of all of the macromolecules on Earth, it is the most produced in nature. Cellulose also acts as an alternate, renewable carbon source for fuel, including bioethanol, and other raw materials. While cellulose is composed of a long chain of ‘-D-glucose, breaking it down to its component sugar molecules is proving to be quite difficult. Because of the time in which cellulose takes to actually break down, enzymes are employed to quicken the process. These enzymes, called cellulases, will need to be redesigned to allow for us to use them under industrial conditions that are harsher than biological conditions. We are interested in redesigning cellulases to make bioethanol production more efficient. Therefore, the degradation of cellulose by cellulases is crucial due to its significance environmentally and commercially. This particular project involves computational research and analysis of Family 7 enzymes (cellulases). We seek to gain a full understanding of Cel7A and Cel7B since they are consequential in industrial Biomass conversion. Using THEMATICS, we will study the Family 7 enzymes whose structures are known, in order to modify or improve enzymatic activity.
Factors influencing business type among women nascent entrepreneurs within the United States

Michelle Black, Glenn Muske, and Margaret Fitzgerald
School of Hotel and Restaurant Administration
Oklahoma State University
Subject Area: Environmental Sciences

This study explores factors that predict the business type opened by women nascent entrepreneurs. Businesses headed by women tend to be service oriented (Hirisch & Brush, 1983). Women-owned firms account for 28% of all privately held businesses within the United States and contributes nearly $3 trillion to the national economy (Center of Women Business Research, 2009). Industry structure has been found to have a major impact on new venture performance (Sandberg & Hofer, 2002). Data are from Wave A of the Panel of Entrepreneurial Dynamics II study 2005 to 2009. Descriptive statistics give a profile of the women nascent entrepreneurs. Logistic regression determined the significant predictors of the business type female nascent entrepreneurs intended to open. Findings of the study can be used to attract more women entrepreneurs to engage in certain types of businesses.

Living in a Label: The Effects of Being Disabled With a Label

Sarah Blackburn-Ellis
College of Education
Oklahoma State University
Subject Area: Education

The purpose of this study was to assess participants' social acceptance and prognostic outlook toward peers who have autistic disorder, learning disorder, or no disabilities and to explore the possibility that gender interacts with disability status in influencing participants' perceptions of peers with disabilities. Participants included 163 undergraduate college students. Measures included an attitude towards disabilities survey, vignette, prognostic outlook survey, and a knowledge survey. Data were analyzed using a 2 x 3 analysis of variance. A correlation was used to examine prognostic outlook, attitudes toward disabled persons, knowledge of autistic disorder and knowledge of learning disabilities. Results indicated a significant interaction between vignette gender and vignette disability label. Prognostic outlook was rated significantly lower for the autistic disorder group than for the group with no disability label. Results from simple main effects tests revealed that males were rated significantly lower on prognostic outlook than females with a learning disability.

Mitigation and Remediation of Gaseous Emissions from Swine Production Facilities

Kyle Blankenship, J. Clemm Turner, Adelheid West, Jeffory A. Hattey
Department of Plant and Soil Sciences
Oklahoma State University
Subject Area: Biological Sciences

In recent years, the number of confined animal feeding operations (CAFO) has increased within the United States to the point that CAFOs produce approximately 40% of US livestock. The reduction of costs in feed, facility management, transportation, and labor has lead production facilities to favor this scheme of management. However, the rural and suburban communities that are in close proximity to the CAFOs are concerned about the pollution of the surrounding air as well as their own health with the increase of malodorous compounds, bacteria, fungi, and endotoxin. The Environmental Protection Agency (EPA) and United States Department of Agriculture (USDA) are dedicated to regulating animal feeding operations and the pollutants they excrete. As CAFO operators look to decrease their emissions effectively and efficiently, the use of biofiltration in these facilities has been under research. A biofiltration system contains a biological active media to react with volatile organic compounds and inorganic air toxics while relying on microbial
catabolic reactions for waste compounds degradation to improve the surrounding air quality. For this experiment, the inlet source gas concentration of NH₃ at 5 ppm and H₂S at 25 ppb will be used to create a concentration observed at swine production facilities. The purpose of this study is to determine if the reactions occurring during the filtration process are directly related to biological, chemical or physical factors.

**Neighborhood Violence and Peer Antisocial Behavior as Predictors of Family Relationships: An Examination of Mediation Effects**

*Cara Bosler*

*Department of Human Development and Family Science*

*Oklahoma State University*

*Subject Area: Social Sciences*

An extensive body of research has documented the developmental significance of children's socialization experiences outside of the family, such as neighborhood and peer factors. For instance, a number of studies have demonstrated significant and positive links between exposure to violence and antisocial behavior in neighborhoods and peer relationships and adolescent antisocial behavior. While these links have been established in numerous investigations, few studies have examined how these socializing factors outside the family influence relationships within the family. The purpose of this study was to examine the links between neighborhood violence and peer antisocial behavior and family relationships. In addition, we investigated whether these associations were mediated by teen antisocial behavior. Results indicated that high levels of neighborhood violence and peer antisocial behavior were associated with high levels of negative parent-child relationship quality and low levels of parental knowledge. Peer antisocial behavior was positively related to sibling conflict. We next examined whether these significant links were mediated by teen antisocial behavior. All of the indirect effects for teen antisocial behavior were significant. Overall, teen antisocial behavior explained between 68 and 100 percent (M = 87.2%) of the variance in the links between the independent and dependent variables suggesting full mediation.

**Single Item Measurement of Personality: Psychometric Properties of the Dynamic Analog Scale**

*Erika Brown*

*Department of Psychology*

*Oklahoma State University*

*Subject Area: Social Sciences*

The purpose of this study was to investigate the psychometric properties of the Dynamic Analog Scale (DAS) - a technique for creating single item measures of personality traits. The DAS is comprised of detailed definitions that encompass personality traits (e.g., extraversion-introversion) and a quasi-continuous analog scale (ranging from -200 to +200) on which a person simultaneously rates himself or herself as well as other individuals. Two-hundred and thirty-eight participants (89 males, 149 females) completed the DAS in one of five conditions. Next, all participants completed standard paper-and-pencil measures of volunteerism, general affect, drinking behaviors, and religiosity. Lastly, participants completed their respective condition of the DAS again to assess the immediate test-retest reliability. Overall, participants' self ratings on the Big Five personality traits were not significantly impacted depending on which condition they were in. However, modifying the trait definitions by adding strengths and weaknesses influenced the self ratings of neuroticism. Reliability coefficients of participants' self ratings ranged from .74 to .87. The DAS predicted participants' self-reported volunteerism, general affect, drinking behaviors, and religiosity equally compared to results typically obtained using a standard Big Five questionnaire. In conclusion, these results support the DAS as an alternative, single item format for measuring personality traits.
Laptop Virtual Reality Tutorial: A Theoretically Constructed Design Framework

Ryan Burkett
College of Education
Oklahoma State University
Subject Area: Education

Desktop virtual reality (VR) challenges users to orient and wayfind with an unfamiliar graphical user interface in a new 3-D location. The up-side to VR in meeting such an extensive design challenge lies in the low-cost, high-exposure-yield resulting from online delivery of virtual worlds as a reusable learning object. Unfortunately, learners are ill equipped to face the challenges inherent to the transfer of learning in virtual environments. Therefore, the primary concern for future research stems from learner interaction with the VR.

In studies conducted by the OSU VR Research Team, learners expressed difficulty in controlling the VR and in understanding the application of the VR environment. To address such obstacles, it is proposed that an interactive VR tutorial would allow users to acclimate the controls and function of VR. This presentation is cross-curricular with discussions targeting curriculum research and development, educational technology, and Instructional technology design. This presentation will (1) describe the theoretical framework supporting the tutorial, (2) outline the development of the VR tutorial, (3) analyze and describe the completed training model, and (4) discuss the proposed tutorial testing structure, and recommendations for future research. In addition participants may connect via laptop to view the completed tutorial at leisure.

Factors Influencing Couple Attitudes Toward Attending Relationship Education: An Examination of Personality, Religiosity, and SES

Brandon Burr, Daniel Hubler, Brandt Gardner
Department of Human Development and Family Science
Oklahoma State University
Subject Area: Social Sciences

Relationship distress and disruption threaten the emotional, physical, and social health of individuals and families, but seldom do adults seek help for romantic relationship difficulties, or seek out sources in which the strengthen and enhance their relationship. In addition, couples managing economic disadvantage may experience increased risk for relationship difficulties, and experience greater challenges in accessing external resources. Couple relationship education (CRE) is one resource designed to combat the effects of divorce and strengthen couple relationships. However, very little is known regarding what motivates individuals to attend CRE programs. Particularly, little is known about factors that potentially influence couple perceptions or attitudes toward CRE, which then can be associated with decisions to attend. Past literature has found that partner differences on factors associated with religiosity, personality disposition, and gender preferences are associated with relationship stability and attitudes toward help-seeking. The current study will examine the relationships among romantic partners’ personality dispositions and religiosity on couple attitudes toward CRE utilizing structural equation modeling based on a national sample of couples. The study will also examine how these associations might differ by income (low vs. middle) and gender.
Implications of variation in nest defense behavior in the Eastern Bluebird (Sialia sialis)

Jennifer Burtka and Dr. Jennifer Grindstaff
Department of Zoology
Oklahoma State University
Subject Area: Biological Sciences

Competition for nest boxes is a frequent cause of aggressive interactions between interspecific species of birds. The competitor is often met with an aggressive response by the occupant; however, there is variation in the intensity of nest defense behavior among individuals of the same population. Previous research has demonstrated that nest defense behavior is repeatable over time and can influence reproductive success. Competition between Eastern Bluebirds (Sialia sialis) and invasive House Sparrows (Passer domesticus) for nest sites results in aggressive interactions in which adult bluebirds and their nestlings may be injured. We investigated variation in Eastern Bluebird nest defense against House Sparrows. We determined that male Eastern Bluebirds that defend their nests more intensely have higher fitness across the season; however, parental defense behavior did not directly affect nestling growth rate. The intensity of male and female aggressive response was positively correlated in social pairs. Male and female bluebirds also differed in repeatability; males did not reliably respond with the same intensity whereas female nest defense intensity was repeatable across the season.

Perceived Anxiety among Stepchildren Concerning Future Caregiving Roles

Katherine Cardwell
Department of Human Development and Family Science
Oklahoma State University
Subject Area: Social Sciences

The objective of this research proposal is to demonstrate the need for investigating problems and solutions regarding stepfamily caregiving. A two phase approach will be implemented to complete this study. First, a research phase will be used to uncover perceived stressors that may affect how stepchildren plan on caring for multiple stepparents. A key goal of the first phase will involve improved understanding of future caregiving expectations in caring for multiple parents. The second phase will entail program development, which will be used to address the lack of information and family education reflecting stepfamily caregiving. This proposal has potential implications relative to assisting family life educators, cooperative extension educators, and family counselors in addressing perceived anxiety among stepfamily caregivers.

Biomechanics and Energetics of walking uphill: A better form of exercise for obese adults?

Cameron Carter, Kellie A Ehlen & Raymond C Browning
Scholar Symposium Participant
Scholar from Colorado State University
Subject Area: Education

Purpose: To compare the energetics and biomechanics of slow uphill walking vs. fast, level walking in obese individuals. Methods: Twelve sedentary, obese (BMI ≥ 30-39) subjects (7 females, 5 males) walked on a dual-belt, force-measuring treadmill. The subjects walked at 0.75 m/s and 1.50 m/s at 6’ and 0’, respectively. Each speed/grade trial was six minutes in duration. Ground reaction forces were recorded at 1200 Hz while lower extremity kinematics were quantified using a three-dimensional motion capture system at 60 Hz. We used an inverse dynamics approach to calculate net joint moments at the hip, knee and ankle. Oxygen consumption and carbon dioxide production were recorded using a portable indirect calorimetry system. Results: Knee joint loads were significantly lower when obese adults walked slowly uphill compared to faster, level walking. Relative aerobic effort was similar between the conditions; 52 vs.
55 %VO2 max during uphill vs. level walking, respectively. Conclusion: Our results suggest that slower, uphill walking may be a good form of exercise for obese adults as it lowers joint loading and risk of musculoskeletal injury while maintaining appropriate levels of energy expenditure.

Effect of Swine Effluent on Soil Microbial Ecosystems

Jason Carver, Megan Bible, Ruchika Fernando, and Udaya DeSilva
Department of Animal Science
Oklahoma State University
Subject Area: Biological Sciences

Irrigation of pasture land with effluent from swine lagoons is a common practice in agriculture. Although swine manure is anaerobically fermented for a significant amount of time before it is applied to the soil, the presence of viable enteric bacteria in the effluent, the microbial composition of the effluent, nor the effect of the material on normal microflora of the soil is well understood. The purpose of this study is to analyze the contribution of animal waste to soil microbial ecosystems by testing strategic areas of swine effluent-irrigated and control soil for their microbial profile.

Samples were collected at different distances from irrigation outlets. Total DNA was isolated from soil samples and bacterial DNA was isolated and amplified from the samples using a PCR-based techniques. A fragment from the conserved 16S rRNA gene and T-RFLP profiles were used to analyze the community structure of microbes within the samples. T-RFLP profiles will be validated by sequence analysis of a subset of the rDNA fragments. We will also screen for the presence of some known enteric organisms as well as the presence of antibiotic resistance among the organisms isolated from soil.

BEHAVIOR OF THE LIZARDS PLESTIODON FASCIATUS, PLESTIODON OBTUSIROSTRIS, AND SCINCELLA LATERALIS IN OKLAHOMA

Cybil Cavalieri and Fox, S.F
Department of Zoology
Oklahoma State University
Subject Area: Biological Sciences

The purpose of this study was to quantify the social and reproductive behavior of Plestiodon fasciatus, P. obtusirostris and Scincella lateralis. We conducted laboratory experiments with brooding behavior and field experiments to test for mate guarding and territoriality. To determine space use in all three species, we conducted a mark-recapture study. We constructed two permanent 1-ha trapping grids of can pitfall traps and cover-boards, with an inter-trap distance of 10 m, in Payne county, Oklahoma, near Oklahoma State University: one in a mixed woodland-grassland habitat and one at a grassland habitat. Space use and homerange overlap were determined by GIS. We manipulated the hydric environment to determine parental behavior of brooding female P. obtusirostris. We size-matched male P. fasciatus and P. obtusirostris for dyadic encounters with and without females, and both on and off homeranges in order to determine social behavior. Change in hydric conditions did not induced female P. obtusirostris to move eggs to more suitable nest sites in our experiments. Plestiodon fasciatus exhibits behavior associated with mate guarding. Plestiodon obtusirostris does not display behavior associated with territoriality, and our experiment examining mate guarding calls for a more intensive study.
Reducing Antipsychotic Drug Prescriptions
Hillary Chambers and Conrad Woolsey, Ph.D., CHES
Department of Human Education and Promotion
Oklahoma State University
Subject Area: Education and Promotion

There has been an alarming increase in the number of adolescents and young adults being prescribed and illicitly using antipsychotic medications. The number of children and teenagers taking antipsychotic medication has more than tripled from 1997 to 2005. To reduce risks of side effects, doctors should be encouraged to start patients with cognitive/behavioral treatment plans which have been shown to be just as or more effective than medication alone (Hoffman, 2009). Medications may initially help change brain chemistry; however, long-term behaviors such as diet, exercise, and the patients' mindset should be explored first. Motivational interviewing (MI) is a highly effective long-term health behavior change technique, yet it is still rarely utilized in health care because practitioners have not traditionally been trained to use this technique (Rollnick, Miller, & Butler, 2008). Therefore, a critical gap exists in our knowledge of what works and the implementation of this effective prevention and treatment approach. The over prescribing of medications could be cut down considerably by training doctors, teachers, and health care practitioners on how to use motivational interviewing. More importantly, MI builds patients self-esteem and autonomy helping them make better future health decisions.

Karen Chavira
Scholar Symposium Participant
Scholar from Sul Ross State University
Subject Area: Minority Issues

My McNair research project focuses on the violence on the Texas/Mexican border from 1910 to 1920. It involves raids and killings from both the Texas Rangers and Bandits from the Mexican revolution. My project discusses all the innocent killings from the raids in the Texas sides and how the residents of the near by cities reacted to the Texas Rangers and to Mexican American residents. The area involved in all the killing and the raids include Porvenir Texas, Brewster, Presidio and El Paso County. It also includes a brief history on previous violence around the Texas/Mexican border before the time period and the involvement of the Mexican Revolution on the surrounding area.

Perceived Availability of Rural Community Services Among Older Adults
Cassandra Clark
College of Human Environmental Sciences
Oklahoma State University
Subject Area: Social Sciences

The purpose of this research is to improve understanding of healthy aging in rural Oklahoma. The population studied was N=171 community dwelling persons age 65 and older. Participants were sampled from the following counties in Oklahoma: Alfalfa, Dewey, Ellis, Grant, Harper, and Major. The key objective of this study was to examine satisfaction with community services among old and very old adults. Results indicate significance for transportation, stores, law enforcement, and emergency response. Overall, the study found that older adults in rural setting experience greater life challenges yet continue to be independent despite lack of resources.
MAP kinase Function in Dictyostelium
Nicole Clarkson, Nghia Nguyen, Jeffrey Hadwiger
Department of Microbiology and Molecular genetics
Oklahoma State University
Subject Area: Biological Sciences

My presentation for the symposium will be my results on the analysis of MAP kinases (MAPKs) in growth and development. ERKs are prototypic MAPKs that act in signal transduction pathways that regulate growth and development in eukaryotes. I have measured the growth rates of Dictyostelium with mutations in ERK1 and ERK2 genes. To understand the role of ERKs in development I have transformed erk1-, erk2-, and wild-type strains with GFP reporter genes that use promoter CotC, promoter TagB, and promoter EcmA and I am examining the spatial expression of these cell-type specific genes in during development. I also plan to continue work on disrupting the ERK2 coding region. As of right now, the erk2- cells have a DNA insertion outside of the ERK2 open reading frame and I am trying to create a better gene disruption by inserting the ThyI gene into the BglII site or the BclI sites of the ERK2 gene. From there, the plan is to see if this complete disruption of the ERK2 gene changes the erk2- phenotypes during development. The disruption of the ERK2 coding region will most likely lead to further analysis of phenotypes.

Optimism and Suicidal Ideation: A Longitudinal Study
Brie Cleary, Meredith L. Slish, LaRicka R. Wingate
Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

Suicide claimed the lives of 33,300 Americans in 2006 and remains the eleventh leading cause of death in the United States (American Association of Suicidology, 2009). Past research has illustrated that multiple factors influence suicidal ideations and suicidality amongst individuals. Amongst the literature, hopelessness, hope, and depression have been correlated with suicidal ideation (Beck, Brown, Berchick et al., 1990; Konick & Gutierrez, 2005) but there is a dearth of literature surrounding the influence of optimism on suicidal ideation. A recent study by Hirsch, Conner, and Duberstein (2007) found that higher levels of optimism were associated with decreased levels of suicidal ideation. The current study sought to examine, longitudinally, the effects of optimism on suicidal ideation. The current study sampled 217 undergraduates from a large southern university. It was hypothesized that higher levels of self-reported optimism at time one would predict lower levels of self-reported suicidal ideations at time two when controlling for the effects of depression and hopelessness. Conversely, it was hypothesized that lower levels of optimism at time one would predict higher levels of suicidal ideation at time two when controlling for the effects of depression and hopelessness.

Nobody Needs STDs
Erin Collier and Dr. Conrad Woolsey
Department of Health Education and Health Promotion
Oklahoma State University
Subject Area: Education

According to the CDC (2007), there are approximately 19 million new cases of sexually transmitted diseases (STDs) in the United States each year. Two common STDs include Human Papillomavirus (HPV) and Herpes. According to Huang (2008), the most common sexually transmitted infection in the U.S. is genital HPV with an incidence of 6.2 million new infections each year. Herpes simplex virus affects more than one in five adults in the U.S. and is the most common STD in the world. Herpes is twice as likely to affect those ages 20-29 and is more common in women (1 in 4 infected) than men (1 in 8 infected). The partial protection of condoms can reduce the chances of contracting and spreading STDs; however, there is a
critical need for increased protection from HPV and herpes. A potential solution to this problem is the development of a topical anti-viral solution by pathologists and epidemiologists. By examining the etiology of herpes and HPV researchers and pathologists could develop a topical product to better protect individuals from these infections. This poster will discuss the etiology of these diseases and research ideas for the development of such a product.

The Effects of Parents' Depression and Emotion Regulation on Child Conduct Problems

Lixian Cui, Rebecca Cassel, Amanda Sheffield Morris

Department of Human Development and Family Science
Oklahoma State University
Subject Area: Social Sciences

Early adolescence is a developmental period of increased psychosocial vulnerability (Steinberg et al., 2006). However, little is known about parents' depression, emotion regulation and child's problem behaviors. The present study focused on early adolescents(N=82) conduct problems and their parents' depression and emotion regulation. Correlational and multiple regression analyses indicate that parent's report of depression and emotion regulation are associated with child report of conduct problems. Specifically, when controlling for child sex, parents' reports of depression, not youths' reports of parental monitoring, were associated with child conduct problems. Parents' sadness dysregulation, anger dysregulation, were positively associated with child conduct problems, while anger emotion coping were negatively associated with child conduct problems. Furthermore, parents' depression mediated the association between sadness dysregulation, anger emotion coping and conduct problems.

Single-Chain Behavior in Mixtures of Amorphous Macromolecules: Does Like Dissolve Like?

Joshua Damron, Lance Gill, Jeff White

Department of Chemistry
Oklahoma State University
Subject Area: Physical Sciences & Technology

Polymers have opened the possibilities of synthesizing new materials with specific properties and applications. They have had a great impact on the material sciences and, by extension, have a tremendous economic importance.

Miscibility (intimate mixing at the molecular level) has traditionally been predicted with the “like dissolves like” rule. This, of course, is taken conditionally; determining the similarity or dissimilarity of two compounds is not always straightforward. For two compounds that are close in semblance (i.e. polarity) it has, historically, been valid. However, miscibility in amorphous macromolecules seems to deviate from this rule without any obvious trend. This makes predicting successful synthesis of new materials from polymer blends quite difficult. Consequently, systematic approaches to the question of miscibility in polymers have been developed by studying single-chain behaviors of amorphous mixtures across a spectrum of temperatures that include the glass transition state. Solid-state 13C CODEX NMR techniques were used to probe slow chain movement of a 50:50 wt% blend of polyvinylethylene and polyisoprene. Arrehnius and WLF models were used to quantitatively assess the data indicating a ~15% increase in the configurational entropy Sc. This research shows that entropy is an important factor in polymer miscibility.
More than just a game: An exploration of high school athletic identity and identity foreclosure, as it relates to self-concept and the future self.

Rachael Davis

Scholar Symposium Participant
Scholar from Texas Christian University
Subject Area: Social Sciences

In a world where a community or nation's power is rooted in the size of its military and the efficiency of its economy the sports industry may be used as an alternative channel to further establish prestige. The drive and desire for such status has promoted exclusive athletic identity in young sports participants. Sports conglomerates have profited from the risk and time players devote to their organizations as well as the desire to become a part of a renowned organization. Simultaneously, the media perpetuates social constructs and stereotypes that further fuel the dreams and desires of youth to be like their idolized stars. These potential stars strive forth without realizing the detriment and expenditure can far outweigh the benefits and the perceived glory of such positions. Why does athletic identity go beyond an individual's ability to exemplify global and communal identity? By exploring and discussing the comprehensive issues such as socioeconomic status, availability of resources, global stigma's and stereotypes, political and religious influences, and geographical influences the themes and motifs present will be transferable across our communities, the country, and the world. When high school student athletes with high athletic identity are given the permission to develop competencies in areas other than sport they will acquire an awareness of something greater than themselves and they will be more suitable to becoming responsible citizens, successful adults, as well, they will create and make the most out of opportunities presented to themselves in life.

A novel strategy for halophilicity in the photoautotrophic proteobacteria Halorhodospira halophila

Ratnakar Deole and Wouter Hoff

Department of Microbiology and Molecular genetics
Oklahoma State University
Subject Area: Environmental Sciences

Halorhodospira halophila is an extremophilic photoautotrophic proteobacterium found in highly saline desert lakes. It is one of the most halophilic organisms known and provides a system to investigate adaptive mechanisms for survival of abiotic stress. Here we report on genome-based studies of halophilic adaptations in H. halophila. Two distinct strategies are known to be used by halophilic organisms to cope with high salt conditions, namely: ‘Salt-in-cytoplasm’ where organisms accumulate potassium ions (up to 5 M), which requires them to have an acidic proteome and ‘Organic-osmolyte’: where compatible solutes are accumulated in the cytoplasm. The salt in cytoplasm strategy is mainly used by extreme halophiles, which gives them ability to grow in high salt environments (up to saturation levels) while the organic osmolyte strategy is used by moderate halophiles, which gives them adaptability to grow over wide range of salt concentrations. We found that H. halophila has an acidic predicted proteome. In line with this, based on flame photometry and X-ray micro probe analysis we found that H. halophila accumulates up to 3 M K⁺ in its cytoplasm. However it can also grow over a broad range of NaCl concentrations (3.5 - 35% NaCl). When grown in 5% NaCl, it has K⁺ concentration similar to E. coli despite its acidic proteome. We have also obtained evidence that H. halophila switches to accumulation of compatible solutes when grown in media containing a reduced potassium concentration. These data indicate that H. halophila is the first extreme halophile which uses both halophilic strategies, which not only enables it to grow in high salt environments but also over wide range. The potassium concentration at which it switches its halophilic strategy is similar to that of its natural habitat (Wadi Nantrun lakes, Egypt), and therefore is likely to be ecologically relevant.
The Effects of Listening to Classical Music on Second Grade Students' Math Test Performance

Tristan DeSisso
Scholar Symposium Participant
Scholar from Harding University
Subject Area: Education

This study examined whether or not classical music had an effect on elementary level students' math performance. The subjects were twenty-three second grade students from a Central Arkansas elementary school. Two math tests were given: one test while listening to classical music and the other test in silence. At the conclusion of the second test a questionnaire was given to determine the subjects' experience with listening to music and the perceived difficulty of the test. The data indicated that listening to classical music did not improve math test scores of these second grade students. The finding from this research indicated that although there was no significant improvement in test scores the subjects enjoyed listening to classical music while testing.

Women and Heart Disease

Kathryn Douglas and Dr. Conrad Woosley
Department of Health Education and Promotion
Oklahoma State University
Subject Area: Education

The purpose of this study is to identify the high rate of misdiagnosed heart attacks in women. Heart disease is the number one leading causes of death among American women (Loeb, & Zbieraiewski – Eischeid, 2009). Heart attack symptoms in women are regularly misdiagnosed by health care professionals because the current warning signs and public perception are based primarily on studies of white, middle-aged men with typical symptoms. In part due to gender bias and public perception, women and some healthcare providers often do not recognize the atypical symptoms found in most women with heart disease. When seen by a health care professional, women relate their symptoms to an emotional response in their life and are characteristically diagnosed with stress, anxiety or post menopausal symptoms. Inaccurate diagnoses can cause women to delay seeking the appropriate medical treatment, and when; or if, women are finally diagnosed, the disease is usually more advanced and their prognosis is worse. By incorporating motivational interviewing we can help women take the necessary steps to prevent heart disease and build self efficacy, empower women, health care professionals and the public to recognize specific atypical symptoms of heart disease in women.

The Acute Effects of a Coenzyme Q-10 Based Ergogenic Spray on Bench Press Fatigue Index among Collegiate Division-1 Football Players

Department of Health and Human Performance
Oklahoma State University
Subject Area: Biological Sciences

Recent interest has grown regarding the potential ergogenic effects of a sublingual spray designed to enhance human performance. **PURPOSE:** The purpose of the study was to examine the efficacy of a coenzyme Q-10 sublingual spray on the fatigue index generated during the bench press in Division-1 collegiate football players. **METHODS:** Twenty five Division-1 college football players (age = 19.6 ± 1.4 years, mass = 107.3 ± 20.8 kg) volunteered to participate in this randomized, double-blinded, placebo-controlled study. Testing included 2 visits occurring over 2 weeks. During visit 1, subjects completed 15
repetitions of the bench press at 50% of their 1 repetition maximum (1-RM). During visit 2, subjects were randomly assigned to an active (n=13) or placebo (n=12) group. Five minutes prior to testing subjects received the sublingual spray and then completed the 15 repetition test. Peak power and percent decline were measured using the Tendo Fitrodyne Weightlifting Analyzer. Two-way mixed factorial ANOVA was used for statistical analysis. An alpha of $P \leq 0.05$ was used to determine statistical significance. **RESULTS:** There were no significant interactions or main effects ($P \leq 0.05$) observed. **CONCLUSIONS:** These findings indicated that the sublingual spray had no ergogenic effects on the fatigue index in Division-1 college football players.

Recreationists’ Perceptions Regarding the Purpose of the Wichita Mountains Wildlife Refuge

Kevin Fink

Department of Health, Leisure and Human Performance
Oklahoma State University
Subject Area: Social Sciences

Federally-mandated impact studies may eliminate some recreational opportunities in the WMWR in OK, an action controversial among users of the Refuge. The purpose of this study was to examine the various views of users related to the purpose of the Wichita Mountains Wildlife Refuge using Q-Methodology. With a P set of 9 people who reported to use the WMWR, sorting 36 statements structured by Recreation Conflict and the Tragedy of the Commons theories, two viewpoints emerged.

How Much is Too Much?: An Analysis of CEO Compensation Among Select Financial Services Firms Receiveing TARP Funds

Jason Gerald and Dr. Charles Apigian

Scholar Symposium Participant
Scholar from Middle Tennessee State University
Subject Area: Social Sciences

Due to the serious recession that the current U.S. economy is experiencing, the media, legislators, and informed citizens have all developed deep concern about the methods and amounts of executive compensation packages of firms receiving government aid in the form of TARP funds. With executive pay notoriously characterized by greed and excess, legislators even went as far as curtailing top executive compensation in some cases. The focus on this research is to determine whether CEOs of select diversified financial services firms which received excessive amounts of TARP funds have justified compensation packages which are suitably aligned with both shareholder interests and overall firm performance. To assess firm and CEO performance, the changes in common financial metrics (ROI, ROE, EPS, NI) as well as the corporate governance quotient will be incorporated into each firm's analysis. Further analysis was then conducted to determine the impact of the managerial power or optimal contracting approach has on a CEOs compensation package. Lastly, by comparing the CEO's pay for a subset of six key firms to the performance of a broader sample set of twenty similarly diversified firms, one can gain a more accurate perception of effective CEO compensation practices.
Reading Achievement: Impact of SES, Parent Involvement and Race
Thomas Gross, Bethany K. Doerksen-Klopp, Levita Y. Bui, Georgetter P. Yetter
School of Applied Health and Educational Psychology
Oklahoma State University
Subject Area: Education

This study examined SES and race as predictors of parental involvement in education (a) at school (PIS) and (b) at home (PIH). Hypotheses: (1) higher-SES parent will be more involved at school, lower-SES parents will be more involved at home; (2) minority parents will be more involved at home and less involved at school; (3) higher levels of PIS will be linked with greater first grade reading achievement, but higher levels of PIH will not; (4) minority children from higher-SES families will demonstrate higher reading achievement than ones from lower-SES backgrounds. Higher-SES parents were linked to higher PIS. No meaningful relationship between SES and PIH existed. Minority parents were less involved at school. African American parents were engaged at home slightly more often than Whites and Asian American parents. For Whites, more parent involvement at school and less involvement at home predicted higher reading achievement. Parent involvement did not predict achievement for minorities once SES was taken into account. Higher-SES children demonstrated higher achievement for all races.

Morphometric Comparisons and Bone Density Among Several Populations of Mexican Free-Tailed Bat (Tadarida brasiliensis)
Alesia Hallmark
Department of Zoology
Oklahoma State University
Subject Area: Biological Sciences

Several morphological traits were compared between three bat populations, one from Vickery Cave, OK ca. 1950, one from Vickery Cave, OK ca. 1990, and the last from Carlsbad Caverns, NM ca. 1990. Bone density was also analyzed. Out the cranial measurements, only tooth length and body weight were shown to vary between any sample sites. There was more variation between older and and more recent samples than there was between the Oklahoma and the New Mexico samples. T-tests (α=0.05) for fluctuating asymmetry in bilateral traits showed no significant difference between right and left halves of the cranium.

A Comparison of Firearms, Sex, Youth, and Violence
Filicia Hernandez
Scholar Symposium Participant
Scholar from Texas Christian University
Subject Area: Social Sciences

The present study looks at the interaction between violence, firearms, sex, and the youth population. The population surveyed is a combination of inner city high school students and incarcerated males in juvenile facilities over four states: California, Illinois, New Jersey, and Louisiana. The sample population size is roughly 42 percent of 835 male inmates from varying institutions and 10 percent from 1,663 students from various high schools. Schools were chosen based on target areas of extensive gun crime and proximity to juvenile institutions, while juvenile institutions were chosen from states with larger populated facilities. It is hypothesized that from simple cross tabulation that proximity to juvenile correction facilities, urbanization, and age contribute to increased allocation of firearms and violence, especially for males.
An Examination of the Relationship Between Body Image at Work and Job Satisfaction

Alexander Jackson and Shelia Kennison, Ph.D.

Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

Prior research has shown that those dissatisfied with their body image experience increase in social evaluative anxiety (Cash, Theriault, & Annis, 2004). The present research investigated the role that body image plays in the workplace, which people are required to interact with both co-workers and customers. We tested the hypothesis that body image would be related to job satisfaction in a study involving 325 undergraduates (154 male, 159 female). Participants completed the Body Esteem Scale (BES) (Franzoi & Shields, 1984) and two job satisfaction measures (the Job Descriptive Index and Job in General, Balzer et al., 2000). Participants were also asked to compare their bodies to those of coworkers (i.e., Coworker Comparison Scale). The results supported the hypothesis, showing BES was positively correlated with job satisfaction.

Synthesis of Oxo Titanium Phthalocyanines as an Electron Donor for Light Harvesting Devices

Rachel Jacobs and Francis D'Souza, Ph.D.

Scholar Symposium Participant
Scholar from Wichita State University
Subject Area: Physical Sciences and Technology

An oxo titanium phthalocyanine, an electron donor for mimiciy of reaction center in photosynthetic system, has been successfully synthesized and characterized. The title compound was synthesized using phthalonitrile in the presence of a titanium metal precursor under argon atmosphere. The synthesized compound was characterized using spectroscopic methods including UV/Vis absorption spectroscopy, fluorescence spectroscopy, 1H NMR spectroscopy, mass spectrometric analysis and electrochemical methods. Further studies to link the synthesized titanium-phthalocyanine to a fullerene acceptor to make donor-acceptor dyads for building light harvesting devices is in progress.

Surface treatment of waste carpet fibers to enhance mechanical properties of composites fabricated from waste carpet

Abhishek Jain, Seshumani Vorrey, Raman P. Singh

School of Mechanical and Aerospace Engineering
Oklahoma State University
Subject Area: Physical Sciences & Technology

Current research involves surface treatment of the carpet waste prior to epoxy infusion with help a novel fabrication technique. It involves, using various surface treatment compounds comprising non-ionic, cationic or amphoteric surfactants. Surface treatment is expected to help preparing the surface for receiving a coating that is intended to adhere to the surface and aid in enhancing good fiber matrix bonding. Advantageously, an aqueous solution that comprises of at least one active agent from, for example group of aromatics or aliphatics, hydrocarbons, petroleum solvents, alcohols, ketones, esters, ethers such as glycol ether will be used. Major problem in recycling carpet waste is its multi component chemistry having nylon, polypropylene, and some adhesives. In addition to this the stain resisting fluorochemicals used in carpet making make the recycling even more difficult. Preliminary studies using various epoxy resins have shown enhancement in mechanical properties. The mechanical properties such as flexural strength, impact strength, screw pull-out and push-out strength, and the physical properties such as density, thermal conductivity of
composites fabricated by using as received and surface treated carpet fiber will be evaluated as per ASTM standards and will be compared to determine the effect of surface treatment on the fibers.

**Potentials for nutrient removal from household greywater using small scale constructed wetlands with plants native to North Central Texas.**

Christina Jones  
Scholar Symposium Participant  
Scholar from Texas Christian University  
Subject Area: Environmental Sciences

This research examines the feasibility of using natural biogeochemical cycling in the reduction and removal of common nutrients present in the greywater effluent of urban residential homes. A water solution is created mimicking household greywater including detergents, soaps, etc. and is then filtered through a set of three cascading mesocosms vegetated with native Texan riparian and wetland species with a soil/gravel medium. System discharge rates will be scaled down from current City of Fort Worth regulations for greywater systems. Once through the system, water quality analysis will be done to determine the chemical and aesthetic changes to the water. This will include determining if key nutrients (nitrogen and phosphorus) are reduced. A second system without vegetation will be created to quantify nutrient removal attributable to soil biota and geochemical cycling. This comparison is useful for two reasons-first, to define how much of the increase in water quality is solely associated with the vegetation and second, to determine what, if any, impacts scenscence of the vegetation will do to the system’s ability to handle greywater. Three floral species and sediment were selected and harvested from a campus stream that receives regular runoff from paved and residential upland areas. The results from this study could then be scaled up and used as a model for residents who are interested in using greywater and preserving native riparian and wetland flora.

**PDA controlled medical vending machine**

Rohit Kadam, Ashwin Kadkol, Raghavendra Rao  
School of Electrical and Computer Engineering  
Oklahoma State University  
Subject Area: Physical Sciences & Technology

The availability of timely and fitting medicine to the needy is a major cause of concern especially in the rural regions of developing countries. According to studies, there exists a grave disparity between health care standards in the urban and rural regions of developing countries. A trusted qualified practitioner, who could dispense the correct medicine without causing an undue addition to the expenses of the local rural population, is a rarity. Also, a regular practitioner could be miles away from the afflicted people, let alone being available at odd times of the day. The solution proposed to the issues raised is towards the large scale manufacture and installation of “A reciprocative System for Health Automation” (ASHA). ASHA is an automated, interactive and intelligent vending system which would interact with the patient, check the patient's history, get the sensor data, and diagnose his/her common ailments. The unique aspect of the product lies in its ability to speak to a patient cutting the barriers of literacy and language. Remote connectivity with a server to access and log medical history data has also been added. With the aid of medical sensors attached to the machine, a doctor can remotely diagnose a patient's ailment. The intelligent vending system is capable of unsupervised diagnosis in case of the need for vending over the counter medicines. ASHA is not to replace medical practitioners but just to aid the existing ones and at the same time to safeguard the rural population from the quacks prevalent in the area by dispensing preliminary medicines which would treat common ailments at subsidized rates or free of cost.
pH Dependence of the Photoactive Yellow Protein Photocycle Recovery
Zhoyang Kang, Johnny Hendriks, Klaas J. Hellingwerf, and Aihua Xie
Department of Physics
Oklahoma State University
Subject Area: Physical Sciences & Technology

Photoactive yellow protein (PYP) is a bacterial blue light photoreceptor for negative phototaxis. The chromophore of PYP is p-coumaric acid (pCA), which is covalently attached to Cys69 via thioester linkage. The phenolic group of the chromophore is negatively charged, stabilized by two strong hydrogen bonds interacting with Tyr42 and Glu46. Photoexcitation of PYP in the receptor state (pG) leads to trans to cis chromophore photoisomerization in 3 ps, followed with protonation of pCA in 250 µs (pB’ state), then protein quake in 2 ms to form the putative signaling state (pB state), and finally returning to the initial pG state in 350 ms that completes the photocycle. Time-resolved infrared spectroscopic techniques are powerful tools for structural studies of functionally important transient states of PYP. By performing analysis of pH dependence of this photocycle recovery reaction, we are able to extract more information from vibrational spectra than only doing analysis at neutral pH.

Effects of Post-Translational Modification on the Microtubule Stabilizing Protein Kar9
Jacob Keeling and Rita Miller
Department of Biochemistry and Molecular Biology
Oklahoma State University
Subject Area: Physical Sciences & Technology

Kar9 is a microtubule associated karyogamy protein that helps to correctly position the mitotic spindle. During mitosis Kar9 will localize to the bud directed spindle and help facilitate the connection with the actin network by forming a complex with microtuble protein Bim1 and binding to the Myo2 protein found on the actin cables.(Beach et al., 2000) This then allows the bud directed spindle pole body to be properly aligned along the mother-bud axis near the bud neck. Kar9 is also subject to several post translational modifications, including sumoylation.(Nida Meednu et al., 2008) Using site-directed mutagenesis, we have mutated the Kar9 gene and disrupted post translational interactions. Combining this technique with di-hybrid analysis with known Kar9 interacting proteins we should be able to better determine the mechanisms that control the function of Kar9.

The Relationship Between Hope and Anxiety
Grace Kifer, Sarah Rhoades-Kerswill, LaRicka R. Wingate, and Kathy Rasmussen
Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

There have been several studies examining the positive effects of hope in multiple areas of psychopathology (Gottschalk, 1985; Arnau, Rosen, Finch, Rhudy & Fortunato, 2007; Cheavens, Feldman, Gum, Michael & Snyder, 2005; Sears & Kraus, 2009; Davis, 2005). While some of these studies examined the effect of hope on anxiety, anxiety is generally controlled for not examined. Instead, most of these studies looked at the effect of hope on depression. This study seeks to specifically examine the relationship between hope and anxiety. The current study included 391 undergraduate participants. The following hypotheses were proposed: (1) higher levels of hope are associated with lower levels of anxiety and (2) lower levels of hope are associated with higher levels of anxiety.
Selection of bermudagrass germplasm that exhibits potential shade tolerance

Kyungjoon Koh, Greg Bell, and Yanqi Wu

Department of Horticulture and Landscape Architecture
Oklahoma State University
Subject Area: Biological Sciences

Bermudagrass is highly recommended for home lawns as well as golf courses in the southern United States. However, bermudagrass does not tolerate shade nearly as well as most grasses. Bermudagrass is extremely variable (Taliaferro, 1995). Recently, researchers reported that a large genetic variability existed in a Chinese bermudagrass collection of more than 120 original accessions for adaptive, morphological, and fertility traits (Wu et al., 2006). Molecular markers and ploidy information further indicate substantial genotypic variation within the germplasm pool (Wu, 2004; Wu et al., 2004). A worldwide bermudagrass collection has been amassed, and is in place for use at the OSU turfgrass breeding program. We believe similar or substantial genetic variation for shade tolerance in bermudagrass exists in the collection. The objectives of this study were to screen bermudagrass selections for their effectiveness in shaded environments and to determine turfgrass characteristics that may be useful for rapid screening of future selections for potential shade tolerance. The turfgrass visual quality and normalized difference vegetative index (NDVI) were collected every two weeks during the growing season and the experimental units # 28, 116, and 118 showed most shade tolerance among 45 different cultivars in 2009.

Effect of the reducing agent dithiothreitol on ethanol production by Clostridium strain P11 using syngas

Balaji Kubandra Babu, Hasan K. Atiyeh, Mark R. Wilkins, Raymond L. Huhnke

School of Biosystems and Agricultural Engineering
Oklahoma State University
Subject Area: Biological Sciences

The effect of dithiothreitol (DTT) on ethanol production by Clostridium strain P11 using commercial and producer syngas (obtained from gasifying switchgrass) was investigated in 250-mL serum bottles. Reducing agents can enhance the regeneration of NADH/NAD(P)H from NAD+/NAD(P)+, which are utilized in the production of alcohols. Results showed an over fourfold increase in ethanol production in 0.1% (w/v) yeast extract media that contained at least 7.5 g/L of DTT after 360 h of fermentation compared to the control medium (without DTT) with commercial syngas (20% CO, 15% CO2, 5% H2, and 60% N2). However, about 35% increase in ethanol production was noticed in 1% (w/v) corn steep liquor (CSL) media in the presence of 2.5 and 5.0 g/L of DTT compared to control medium. DTT did not enhance ethanol production in either yeast extract or CSL media with the producer syngas (14.5% CO, 14.3% CO2, 8.5% H2, 3% methane, 0.4% acetone, and 59.3% N2). The acetone in the producer syngas was reduced to isopropanol. DTT could have been used in the production of isopropanol instead of ethanol. This could explain why DTT did not enhance ethanol production when producer syngas was used in the fermentation.

Ester- and Ketone-Substituted (±)-1-Alkyl-6-nitro-1,2,3,4-tetrahydroquinolines by a Tandem SNAr-Michael Reaction

Eric Lee and Richard A. Bunce

Department of Chemistry
Oklahoma State University
Subject Area: Physical Sciences & Technology

A synthesis of ester- and ketone-substituted (±)-1-alkyl-6-nitro-1,2,3,4-tetrahydroquinolines has been developed from 2-pentenoates and 3-pent-1-ones substituted at C5 by a 2-fluoro-5-nitrophenyl group. The cyclization involves an S_NAr reaction followed by a Michael addition that occurs exo to the final ring. A previously reported version of this annulation proceeded by an initial endo Michael addition (acceptor
Parental behaviors and outcomes in youth from high risk communities

Tammy Lee and Ben Houltberg
Department of Human Development and Family Science
Oklahoma State University
Subject Area: Social Sciences

Research has established that adolescents that are exposed to high levels of violence in the neighborhood are vulnerable to maladaptive outcomes. Parenting behaviors are important in socializing adolescent development and serve as an important resource in high-risk communities. Our study examines parenting behaviors in relation to outcomes in a sample of 84 adolescents from high-risk neighborhoods. Our sample consisted of predominately minority adolescents (64 percent African American, 19 percent Caucasian, 12 percent Bi-racial, 4 percent Latino and 1 percent Asian). Most of the children reported hearing guns being shot at least once (81 percent) while 30 percent of the children reported hearing guns on multiple occasions. Approximately, 32 percent of the children reported seeing someone get shot and 38 percent reported seeing someone get stabbed. We found that parental support was related to higher levels of pro-social behavior and decreased conduct problems. In addition, poor monitoring was associated with less pro-social behavior and increased conduct problems and relational aggression. Finally, inconsistent discipline was related to higher levels of relational aggression. Parenting behaviors were also related to the level of exposure to violence. Our findings suggest that parenting behaviors are important in protecting adolescents in high-risk communities.

Mechanism of Internal Proton Transfer Reactions in Proteins

Yunxing Li, Aihua Xie, Edward Manda, Beining Nie, Wouter Hoff, and Richard Martin
Department of Physics
Oklahoma State University
Subject Area: Biological Sciences

Proton transfer reaction is a very basic and crucial event in a large array of biomolecular processes, such as encompassing bioenergetics, biological signaling, and enzymatic catalysis. Understanding the mechanism of it is a long standing problem in biophysics. We report a proof of concept study on the rate and mechanism of internal proton transfer reactions in proteins. A proton donor-accepter model system, that resembles the active site structure of green fluorescence protein and photoactive yellow proteins, is employed in this study. A first principle method without adjustable parameters was used to construct the energy landscape for proton transfer pathway. We identified two key structural elements that control the rate of proton transfer. This mechanism is expected to be applicable to a broad range of proton transfer systems.
Technology and Students with Special Needs- Learning Practical Skills Through Technology Integration

Holly McVay, Joy Dwyer, Vallery Feltman
College of Education
Oklahoma State University
Subject Area: Education

This model explores the advancement of technology, and the need to integrate technology in helping meet the needs of students with special needs. The model describes core/foundational skills needed to start the groundwork for these students to become gainfully employed after they graduate from High School. The model then advances to different levels of proficiency that the student should be acquiring as they learn real life application skills through manipulation of technology software and hardware. The model tops out with having the student educated in life and job skills, with the help of educators, parents, and the community to become successfully employed. It describes the types of technology that can be used to help meet the goals of the model and gives examples of how the technology can be used in practical situations. The model also identifies theories to guide educators in meeting the objectives of the model and lists possible challenges that would need to be considered. This model will help contribute the field of special education by offering practical technology solutions to advancing the employability of the students with disabilities.

Within- and between-generation effects of drought stress for leaf hair production and flowering time in Arabidopsis thaliana

Lydia Meador and Dr. Janette A. Steets
Department of Botany
Oklahoma State University
Subject Area: Biological Sciences

Water stress is a ubiquitous abiotic factor influencing plant populations. Plants have evolved different mechanisms to deal with drought stress, including dehydration avoidance and drought escape. Here, we examine whether Arabidopsis thaliana responds plastically (differentially) with respect to dehydration avoidance and drought escape traits when grown in different soil moisture conditions. Twenty-six European ecotypes of A. thaliana were grown under well-watered or drought conditions. We quantified the effect of watering regime for plant growth and reproduction (chlorophyll content, rosette diameter, and total reproduction), drought avoidance (leaf hair production), and drought escape (flowering time) traits. Drought stress reduced plant size and chlorophyll content but did not affect total fruit production. The ecotypes responded plastically to drought with respect to flowering time and leaf hair density; plants experiencing drought flowered earlier and produced leaves with greater leaf hair density. We found significant genetic variation among the ecotypes for plasticity in flowering time and leaf hair density, indicating the potential for plasticity in these traits to evolve via natural selection. To determine whether the induced plastic responses in leaf hair production and flowering time in the maternal generation were transmitted to the progeny and influenced progeny reproductive potential, we grew offspring under well-watered and drought conditions. We expect that offspring experiencing an environment similar to the mother’s will show higher fitness (flower and fruit production) than those individuals experiencing the water treatment opposite of their mother’s.
Biocompatibility and Toxicity of an Array of Solvents and Frankincense Oil on Healthy and Cancerous Bladder Cells

John Miskelly and Joshua D. Ramsey

School of Chemical Engineering
Oklahoma State University
Subject Area: Biomedical Sciences

Bladder cancer, as with most other types of cancer, has no definitive cure. Modern medicine, however, has made tremendous steps in introducing alternative treatments in an attempt to solve the cancer puzzle. One alternative treatment that we explored in this study is the use of frankincense oil, which based on reports in the literature, had shown promising results in in vitro cancer studies. These prior studies suggest that the proper concentration of oil selectively induces cytotoxicity in cancerous cells while having no negative effect on healthy tissue. The goal of our study is to identify a biocompatible solvent in which the frankincense oil could be delivered into the human body in a safe and effective manner. Thus far, we have compiled an array of potential solvents with low toxicity for further testing, and an analytical light scattering method has been developed to measure the solubility of frankincense oil for each prospective solvent. We intend to present our current findings and provide information on our future plans, in which we aim to measure solvent toxicity on healthy bladder cells and oil/solvent efficacy on bladder cancer cells in vitro.

Organic Agriculture in Oklahoma: Catalysts and Roadblocks for Producers

Shelley Mitchell

Department of Leisure Studies
Oklahoma State University
Subject Area: Environmental Sciences

The purpose of this study was to examine: (1) the characteristics of Oklahoma people and operations in organic farm and/or ranch production, (2) the reasons cited for their extent of involvement in organic agriculture, and (3) any barriers they have had to overcome while producing organically. The study population was certified and non-certified organic producers and processors in the state. Numerical and narrative data were collected from the 61 organic respondents. Analysis was of frequency and percentage of response, as this study was descriptive in nature, being an initial attempt to collect information about the current status of organic production in Oklahoma.

Olympic Effect: Do the Olympic Games influence individual nationalism and attitudes toward the host country?

Hassan Mohamed and Dr. Vinai Norasakkunkit

Scholar Symposium Participant
Scholar from Minnesota State University of Mankato
Subject Area: Social Sciences

The Olympics is often thought to be a time of unity, many nations putting aside their differences and coming together as one. However within the competition we focus on individual differences trying to use the Olympics as a political tool to differentiate ourselves from other countries. This particular study was designed to measure the degree to which the Olympics influenced an individual’s sense of nationalism, self concept, and attitude towards the Olympic host country. Through the use of questionnaires and the implicit association test before and after the Olympics, the study attempted to reveal attitude change at both the conscious and unconscious levels. It is hypothesized that the Olympic effect will: 1) increase nationalism, 2) increase positive attitudes towards the host country, and 3) increase the level of interdependence with others in our self-concept. However, it is also predicted that greater changes will occur with conscious attitudes rather than with unconscious attitudes.
Climatic influences on glaucous-winged gull (Larus glaucescens) behavior and movement patterns at Protection Island Wildlife Refuge

Andrea L. Moore
Department of Environmental Science
Oklahoma State University
Subject Area: Environmental Sciences

Environmental factors play a key role in influencing shorebird behaviors. Glaucous-winged gulls (Larus glaucescens) engage in nesting and roosting behaviors providing a rich repertoire of behaviors during the breeding season at Protection Island National Wildlife Refuge, Washington. I analyzed the effects of climatic variables on the distribution of 28 gull behaviors in three habitat sites (colony, jetty, and beach) and the association of behaviors to climatic variables with detrended correspondence analysis (DCA) and canonical correspondence analysis (CCA). DCA revealed a gradient in behaviors associated with site along Axis 1. This pattern was likely due to habitat structure and social organization. Locomotive, agonistic, courtship, and fledgling provisioning behaviors occurred more frequently in the colony. Behaviors related to self-maintenance occurred in all three habitats throughout the sampling period. CCA revealed agonistic behaviors along a tidal gradient in the colony and self-maintenance behaviors along a time of day gradient. Time of day, tide and temperature were associated with behaviors in the jetty; gulls tended to use the jetty for roosting. On the beach, gulls engaged in thermoregulatory and roosting behaviors. These behaviors associated with temperature, wind speed, tide and time of day gradients. These analyses revealed associations consistent with other gull behavior studies.

Media image influence on body esteem and comparison of self to others

Lindsay Murn, Dr. Julie Dorton Clark, Marisa Moore
School of Applied Health and Educational Psychology
Oklahoma State University
Subject Area: Education

Negative body image is common among individuals in Western societies (Cash & Pruzinsky, 2002). Unrealistic societal ideals and a rise in body image disturbance have led to an explosion of studies on the impact of media exposure on body satisfaction and dissatisfaction (Dittmar, 2009). Current research has revealed a strong tendency for individual's to compare themselves to both peers and media figures (e.g., Schutz, Paxton, & Wertheim, 2002). Additionally, decreases in body image feelings have been documented directly after viewing images epitomizing societal ideals. The purpose of this study was to investigate the influence of idealized media images on body esteem and comparison of body parts to same sex peers. Concerns about weight increased after exposure to idealized images for both males and females, and male sexual attractiveness and physical attractiveness scores decreased, indicating more negative feelings toward the self at post-test. Results of this exploratory study indicated significant changes across body comparison and body esteem after exposure to images of idealized bodies for both males and females.

Use of MOS gas sensors to monitor the quality of stored oil seeds.

Natawut Neamsorn and Grace Okiror
School of Biosystems and Agricultural Engineering
Oklahoma State University
Subject Area: Physical Sciences & Technology

The quality of grain during and after storage affects its shelf life, end use and ultimate economic value. Traditionally, the storage environment has been the focus of quality monitoring, such as temperature and relative humidity measurement. Modern techniques measure the evolution carbon dioxide or another target gas to indicate the level of biological activity in the grain. Oilseeds, however, are more prone to spoilage due to their inherent chemical composition rather than external factors. In this study, three low-cost, MOS gas
sensors were used to monitor the quality of canola during accelerated shelf-life conditions. The preliminary results encourage a more in-depth investigation of the headspace gas composition of stored oilseeds as it holds potential for earlier deterioration detection.

Undocumented Students and Merton’s Strain Theory

Jenny Nguyen

Scholar Symposium Participant
Scholar from Texas Christian University
Subject Area: Social Sciences

Federal policies allow illegal immigrants to attend public schools only until the 12th grade. The purpose of this study is to determine whether or not the structural components of the educational system is discouraging undocumented students to pursue a higher level of education. With regards to Robert Merton’s Strain Theory, the study will determine whether or not the goals and aspirations of these students are blocked by societal strains. Currently there are ten out of the fifty states that are have policies allowing undocumented students to pay in-state tuition for post secondary education (if these students meet certain criteria.) This study will involve in-depth interviews with undocumented students through snowball sampling. Interviews will also be conducted to high school counselors and college admission counselors. This study will hopefully give more insight on how undocumented students perceive the educational system and raise awareness on the policies regarding undocumented students and the educational system.

Analysis of Switchgrass Flower cDNA library

Randilea Nichols, Xin Zeng, Niran Jambunathan, Ramamurthy Mahalingam

Department of Biochemistry and Molecular Biology
Oklahoma State University
Subject Area: Biological Sciences

Switchgrass has emerged as a prime bioenergy crop. Switchgrass is a great candidate for cellulosic ethanol production, since switchgrass requires very little care and management. Using switchgrass to make cellulosic ethanol would reduce the need to use food crops such as corn. Understanding the genes expressed is an important first step. This research focuses on the genes expressed in the switchgrass flowers. RNA was extracted from the flowers, then mRNA was isolated and purified. The first and second strands were synthesized, digested, and ligated into vectors. Those vectors were then introduced into chemically competent cells by transformation. The cells were then plated and over 2,000 colonies picked for sequencing. In the future, we plan to compare switchgrass libraries to find similarities.

Identify Formulation Variables That Optimize Gene Delivery Efficiency of CPP-Ad and CPP-PEG-Ad Nanoparticles

Adane Nigatu and Joshua Ramey

School of Chemical Engineering
Oklahoma State University
Subject Area: Biomedical Sciences

Gene therapy is the treatment or prevention of disease through introduction of nucleic acids into somatic cells of a patient using a gene delivery vector. Viral gene therapy vectors are highly efficient but have drawbacks such as potential oncogenicity, immunogenicity and promiscuous tropism. In contrast, synthetic vectors are generally safe but inefficient. We propose an improved hybrid vector that is composed of fiber/knobless adenovirus (Ad) and a synthetic polyethylene glycol (PEG) polymer- cell penetrating peptide (CPP) conjugate that performs the function of the fiber and knob proteins. We hypothesize that the resulting
CPP-Ad and CPP-PEG-Ad nanoparticles will maintain the efficiency of the virus and show resistance to immune inactivation. Additionally, incorporation of targeting ligands will enable flexible targeting. Particle size, zeta-potential and polydispersity are being characterized using dynamic light scattering, and particle morphology is being studied by electron microscopy. The effect on native virus tropism and nanoparticle transduction efficiency is being studied on native virus receptor positive (CAR+) and negative (CAR-) cells. The study aims to optimize transduction efficiency by varying PEG molecular weight and the ratio of CPPs to Ad.

Filipino Migrant Nurses to the Midwest Region of the United States

Joseph Noreik and Dr. Vivian Foss, Department of English/McNair Scholar Mentor

Scholar Symposium Participant
Scholar from the University of Wisconsin Oshkosh
Subject Area: Social Sciences

What country would most Americans associate with immigration issues and the United States? Mexico. Recently, the migration to the U.S. from the Philippines has played a large role in shaping America. In this research, collected data revealed how knowledgeable Filipinos are with the issue of migration, how their experiences have influenced their work in the U.S. and compared their experiences to related literature.

In addition, migrant nurses of the Midwest region were interviewed, and scholarly journals were reviewed. Participants answered questions about their education and work experiences. Of nineteen participants, nearly all students and nurses agreed on having had positive experiences. To understand them, one should understand three concepts: First, there have been many ways nurses have come to America: not only by visas, but also by way of the Exchange Visitors Program and other means. Second, one should understand the migration patterns to the U.S. throughout history. Finally, one should also understand that the culture of the Filipino people is significant to why so many are nurses in the U.S. The Midwest region has been home to Filipino nurses for numerous decades. As the Filipino population continues to rapidly grow, more nurses will continue to originate from the Philippines.

Analysis of the Daily High and Low Temperature Forecasts Conducted by the National Weather Service Melbourne Office

Roland Nuñez

Scholar Symposium Participant
Scholar from Embry Riddle Aeronautical University
Subject Area: Environmental Sciences

The National Weather Service provides daily high and low temperature forecasts through several regional offices around the United States. The Melbourne Office provides forecasts for Daytona Beach and surrounding areas using the National Digital Forecast Database. The accuracy of the daily high and low temperature forecasts, measured using maximum/minimum thermometers, was calculated using data collected during a six-month period. The analysis used a two-sample t-test with independent variables. The results showed a high degree of accuracy from the Melbourne Office with their forecasts for the daily high temperatures. An even higher degree of accuracy was found when analyzing the forecasts for the daily low temperature.
The investigation of the Djibouti and Eritrea border dispute: the view and opinions of recent immigrants and other people living in Minnesota.

Abdullahi Nur and Dr. Forrest Wilkerson
Scholar Symposium Participant
Scholar from Minnesota State University of Mankato
Subject Area: Social Sciences

In order to further understand and learn about the causes and consequence of the border dispute between Djibouti and Eritrea, a research project surveying recent horn of Africa immigrants was conducted. The research discusses causes of the border war, and view points of immigrants from neighboring countries and international community. In order to answer research questions data was collected from various sources: books, journals and videos about Djibouti and Eritrea. All data was reviewed and recorded. Some of the questions that were discussed and answered in the research are what caused the border dispute? What is the international community view point on the border dispute? And others questions regarding the border dispute.

Ladycalcin: a Novel Calcium Binding Protein in Ladybugs

Karina Ochoa and Angela R. Porta (faculty sponsor)
Scholar Symposium Participant
Scholar from Kean University
Subject Area: Biological Sciences

Calcium plays a number of roles that are critical for the regulation of many cellular functions, such as neuromuscular transmission, muscle contraction, bone mineralization, cell-cell adhesion and signal transduction mechanisms. Intracellular levels of calcium are tightly regulated and vary in response to extracellular signals to produce calcium mediated physiological responses. Calcium binding proteins are thought to be the probable targets and mediators of many of the actions of calcium as a second messenger. We have identified a novel calcium binding protein in the ladybug, *H. convergens*, which cross reacts with antibody to calbindin-D<sub>28K</sub> and has a molecular weight similar to calbindin-D<sub>28K</sub>. Calbindin-D<sub>28K</sub> is a member of the EF-hand family that is an evolutionarily conserved protein. Most of the published studies involving calbindin-D<sub>28K</sub> have been done using vertebrate organisms. However vastly more kinds of invertebrate than vertebrates have been described; 42,580 vertebrate species contrasted to 990,000 species of invertebrate, of which 290,000 are beetles, to which the ladybug belongs. The first invertebrate homolog to calbindin-D<sub>28K</sub> was identified and purified in squid and the first insect homolog identified and purified in Drosophila. Ladycalcin represents the first putative homolog to calbindin-D<sub>28K</sub> identified in beetles.

THE ACUTE EFFECTS OF A SPORT SPECIFIC WARM-UP ON FLEXIBILITY IN RECREATIONAL COLLEGE-AGED MALES

Christie Pollner, K.L. Everett, D.B. Smith, B.J. Thompson, R.E. Fiddler, & E.D. Ryan
Spears School of Business
Oklahoma State University
Subject Area: Education

Sport-specific warm-ups are becoming increasingly popular over traditional static stretching maneuvers; however the precise volume of warm-up is yet to be determined. PURPOSE: The purpose of this study was to examine the acute effects of different volumes of a sport specific warm-up on lower body flexibility. METHODS: Twenty healthy, recreationally active males performed 3 randomly ordered conditions [control, sport-specific warm-up (WU1), and the sport-specific warm-up with twice the volume (WU2)] following a 5 min light jog. Flexibility (FLEX) was assed prior to and following each condition. A two-way repeated measures ANOVA [condition x test; 3 x 2] was used to analyze FLEX with an alpha level of 0.05 set for statistical significance. RESULTS: There were significant increases in flexibility from pre to post warm-up.
for both the WU1 (7.7% increase; p=.000) and WU2 (6.6% increase; p=.000), conditions. CONCLUSION: The results of the present study suggest that both volumes of a sport specific warm-up increase lower body flexibility in recreationally trained males.

Comparison of Health Education Performance Evaluations among Presenters, Program Recipients, and Program Request Coordinators.

Kari Pratt
Department of Educational Psychology
Oklahoma State University
Subject Area: Education

Peer Health Education programs are scheduled when individuals request a specific program for their Greek organization, residence hall, academic course, or other campus organization. After each presentation, a program evaluation is distributed and completed by the program participants in order to summarize their thoughts regarding the educational program they received. However, there has never been any method in which to determine if the program requester, program presenters, and program participant's opinions of program effectiveness were parallel. Without this information, it is impossible to know if the program requester's expectations were met, nor is it possible to know if the participants held the same judgment of the program as the presenters. Categorical multiple regression was utilized to assess health education program satisfaction levels of all groups so that program coordinators are able to more effectively create, implement, and evaluate future programming as well as more efficiently train future peer health educators.

BULK AND NANOSCALE CHARACTERIZATION OF POLYMER PRECURSOR DERIVED SILICON CARBIDE AS A FUNCTION OF PROCESSING TEMPERATURE

Arif Rahman and Raman P. Singh
School of Mechanical and Aerospace Engineering
Oklahoma State University
Subject Area: Physical Sciences & Technology

Silicon carbide (SiC) is most commonly used for structural as well as nuclear applications due to its superior properties. Different processing routes are followed for the fabrication of silicon carbide. Powder processing techniques, such as sintering, are most common but require high temperature and pressure. An alternative-processing route is polymer infiltration and pyrolysis. In this study, fabrication of polymer derived SiC using polymer infiltration and pyrolysis technique along with characterization of silicon carbide is performed. Allylhydridoploycarbosilane (AHPCS) is used as a preceramic polymer. Final processing temperatures are varied to observe the change in microstructure as well as physical and mechanical properties. Density, porosity and thermal conductivity of SiC as a function of processing temperature are determined. The polymer-to-ceramic conversion at first results in amorphous structure at lower processing temperature and further heating results in evolution of nano-crystalline structure embedded in amorphous silicon carbide. Non-contact mode atomic force microscopy is done to determine the degree of crystallinity as a function of processing temperature. The degree of crystallinity followed an increasing trend with increasing processing temperature. Ring-on-ring tests are done on bulk samples to determine biaxial flexure strength. Hardness and modulus are determined using nanoindentation. These properties are primarily influenced by the degree of crystallinity.
Analysis of photoactive yellow protein using site directed mutagenesis

Rachana Rathod, Masato Kumauchi¹, Sandip Kaledhonkar², Aihua Xie², and Wouter D. Hoff¹

¹Department of Microbiology and Molecular Genetics, and ²Department of Physics
Oklahoma State University
Subject Area: Biological Sciences

Photoactive yellow protein (PYP) is a bacterial blue light receptor containing a $p$-coumaric acid ($p$CA) chromophore, and triggers negative phototaxis in the photosynthetic bacterium *Halorhodospira halophila*. PYP is a prototype of the large PAS domain protein superfamily of signaling proteins. On illumination, it exhibits a photocycle, in which the initial $p$G dark state is transiently converted to the $p$B signaling state. The complete Ala mutagenesis scan of PYP identified Ile39Ala as one of novel residues critical for PYP function. Ile39 is among 9 well conserved residues in the PAS domain superfamily. We report how Ile39Ala mutation affects the chromophore-protein interactions and the pH dependence of the kinetics of $p$B decay. The results provide insights into how the functional properties of PYP depend on its structure, particularly spectral tuning, $pK_a$ tuning, and signaling kinetics.

An Exploratory Examination of the Interpersonal Psychological Theory of Suicide in American Indians

Sarah Rhoades-Kerswill and LaRicka R. Wingate

Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

For American Indians ages 10-34 suicide is the second leading cause of death with a total of 234 each year from suicide alone (National Vital Statistics Reports, 2007). Considering that the age-adjusted suicide rate for American Indians is 72% higher than for all other ethnicities combined in United States, suicide is arguably the most important issue faced in Indian Country (Indian Health Service, 2000). Joiner’s Interpersonal Psychological Theory of Suicide has been corroborated as an accurate model for suicide and suicide attempts (Joiner, 2005; Van Order, Witte, Gordon, Bender & Joiner, 2008). However, it has not been examined in the American Indian population. The current exploratory study sampled 38 American Indian college students. The following hypothesis was proposed: perceived burdensomeness, thwarted belongingness, and acquired capability will predict higher levels of suicidal ideation in American Indian college students.

The Role of Testosterone on Coloration of Juvenile Male Collared Lizards (Crotaphytus collaris)

Erin Roberts

Department of Agriculture
Oklahoma State University
Subject Area: Biological Sciences

Skin coloration in lizards can serve many functions such as attracting mates, intimidating other males, providing camouflage, and regulation of body temperature. Juvenile male collared lizards (Crotaphytus collaris) display several conspicuous bright orange bars around their neck and on their sides. The goal of our research is to help explain the role of a specific hormone (Testosterone) in juvenile lizard coloration. We took blood samples from juvenile collared lizards and measured the concentration of circulating testosterone. We also took spectrometry readings of the orange bars to quantify their brightness. We expect to find a positive correlation between blood testosterone levels and brightness of orange bars. We suspect
that the orange bars on juvenile males (and the underlying testosterone) are used in sexual behavior and male strategies, even though the juveniles aren't capable of reproduction yet.

(±)-1-Alkyl-4-oxo-2-aryl-1,2,3,4-tetrahydroquinoline-3-carboxylate Esters by a Tandem Imine Addition-SNAr Reaction

James E. Schammerhorn and Richard A. Bunce

Department of Chemistry
Oklahoma State University
Subject Area: Physical Sciences & Technology

The development of a new tandem imine addition-SNAr annulation reaction has afforded a new approach to 1,2,3,4-tetrahydroquinolinone-3-carboxylate esters. A series of 1-alkyl-4-oxo-2-aryl-1,2,3,4-tetrahydroquinolinone-3-carboxylate esters have been generated by reacting an imine with a β-ketoester substituted at C3 by a 2-fluoro-5-nitrophenyl group. Variation in the final product is possible through changes in the structure of the imine and potentially by altering the electron-withdrawing group on the aromatic acceptor. The imines are formed by reacting a 1:1.2 ratio of a primary amine with a benzaldehyde derivative in dimethylformamide for 6 hours. The β-ketoester is then added to initiate a spontaneous tandem reaction to produce the substituted 1,2,3,4-tetrahydroquinolinone-3-carboxylate esters in 73-89% yields. The reaction occurs without the need of added base or heat. To date imines derived from benzaldehyde have given the best results. Future work will include determining conditions that can support the use of other imines to broaden the scope of the process.

Expectancies, Ethnicity, and Treatment Process/Outcome in a Community Mental Health Clinic

Shakibra Scott, Nicki Aubuchon-Endsley, Jennifer Callahan

Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

Research supports the robust relations between pre-therapy expectancies and treatment outcome in numerous therapeutic settings (e.g., outpatient, inpatient, group, and individual). However, very few studies have investigated this phenomenon using American Indian samples. Therefore, the current study utilized a sample (n=71) of clients presenting to a community mental health clinic known to have a relatively high percentage of American Indian clients (approximately 25%). Clients were given several measures of expectancies (Psychotherapy Expectancies Inventory-Revised, Milwaukee-Psychotherapy Expectancies Questionnaire), cultural identity (Orthogonal Cultural Identity Scale) and sociodemographic information prior to treatment. One year after beginning the study, clients’ charts were investigated to determine the effects of treatment process, if they were still utilizing services or treatment outcome, if they had terminated services. It was hypothesized that treatment process and outcome would be related to expectancies, but that this may differ across ethnicity. Results suggested that expectations were significantly related to the process ($F[3, 43]=2.81, p=0.05$) and outcome of treatment ($F[1, 17]=4.53, p=0.048$). Differences in the relations between treatment expectancies and process were observed across ethnicity. Data preliminarily suggest that there may be ethnic differences in these relations and that measures of expectancies need to be modified for cultural appropriateness for American Indian clients.
THE COSTS OF AN IMMUNE CHALLENGE ON EGG PRODUCTION IN THE ZEBRA FINCH (*TAENIOPYGIA GUTTATA*)

Arielle Shanahan and Dr. Jennifer Grindstaff  
Department of Zoology  
Oklahoma State University  
Subject Area: Biological Sciences  

Although the immune response provides important defense from infection, activation of the immune response may induce trade-offs between fitness components. The cost of diverting limited resources from other physiological functions to the immune response may be measured as a reduction in growth rate, elevation of metabolic rate, reduced sexual ornamentation, or a reduction in reproductive success. Depending on the nature of the immune challenge, reproduction can be affected in several ways. Parental behavior may be impacted or the number of offspring produced may be reduced. Furthermore, the costs of an immune response may not be equivalent for all antigens. In particular, antigens that strongly stimulate the innate immune system are thought to involve greater energetic costs. This study compared the effects of immune challenge with a T-cell dependent antigen, T-cell independent antigen, and non-specific stimulation of the immune response through use of an adjuvant on reproduction in breeding female zebra finches (*Taeniopygia guttata*). The effects of immune challenge on latency to produce a clutch after challenge, clutch size, egg size and latency to produce a replacement clutch were recorded.

Biodiversity and Ecology of Leafhoppers (*Family Cicadellidae*) at the Tallgrass Prairie Preserve

Wyatt Sharber and Kelly Derennaux  
Department of Botany  
Oklahoma State University  
Subject Area: Biological Sciences  

Arthropods, such as leafhoppers (*Family Cicadellidae*), are an important and often overlooked part of ecosystems and can be a strong indicator of the health of the ecosystem. This study uses leafhoppers that were collected from the Tallgrass Prairie Preserve in Osage County using vacuum sampling. A suite of environmental variables were also collected and an existing set of vegetation data is associated with each transect. The leafhoppers collected were sorted into morphospecies for biodiversity tests, and the environmental variables were compared to the communities using a DCA.
Nanoparticles – A novel tool for fluorescent labeling of live cells and delivery of biological molecules

Asitha Silva, Joongho Moon, and Jeanmarie Verchot-Lubicz
Department of Entomology and Plant Pathology
Oklahoma State University
Subject Area: Biological Sciences

Nanoparticles with average dimensions of 100 nm or below has been used in various sub disciplines of bioscience and biomedicine including non-invasive imaging and targeted delivery of molecules into tissue. Conjugated Polymer Nanoparticles (CPNs) are intrinsically fluorescent carbon based structures whose engineered dimensions fall below 100 nm. These nanoparticles possess advantageous photophysical properties such as high fluorescent quantum yield, large excitation coefficient and efficient signal transduction which make them use full in fluorescent Microscopy. Amphipathic structure and flexibility in further chemical modification make them permeable through biological membranes and potential use as a carrier of biological molecules.

In this study CPNs were assessed for their ability to fluorescent labeling of Tobacco BY2 cells and protoplasts by co culturing in the culture medium. More than 50% fluorescent positive protoplasts were observed under B2A excitation filter after 2 hour incubation with 10 μM CPNs. The green fluorescent signal was stable for 2 days without any noticeable reduction in intensity. Protoplasts did not show significant reduction in cell viability with CPNs concentrations below 50 μM after 24 hours of incubation. Confocal analysis of BY2 cells treated with similar concentrations of CPNs demonstrated that cell wall provides a barrier for CPNs uptake by BY-2 cells.

Phenotypic and Genotypic Characterization of Antibiotic Resistance Integrons in Salmonella enterica serovar Newport

Raymond Soto, Dr. John Willford, Ashley Driscoll M.S.
Scholar Symposium Participant
Scholar from the University of Wyoming
Subject Area: Biological Sciences

Numerous recent outbreaks of Salmonella enterica have been found to be resistant to multiple antibiotics, which only exacerbates an already serious infection. Integrons, which are mobile DNA elements, have been found in previous studies to contribute to antibiotic resistance. Two consistently observed integrons (1.0 kb and 1.2 kb) were cloned and introduced into an antibiotic sensitive strain of Escherichia coli. Upon phenotypic characterization, the 1.0 kb integron was found to confer resistance to streptomycin. Genotypic characterization supported this finding with the presence of the aaD1 gene in the integron cassette. The 1.2 kb integron was unable to be phenotypically characterized, but genotypic characterization showed the presence of potential antibiotic resistance genes. This characterization demonstrated that these integrons contribute to the antibiotic resistance profile observed in the Salmonella enterica.

The Effect of Mortality Salience on Weapon Bias

Matt Spencer, Bradley, K. I., & Kennison, S. M.
Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

The research tested the hypothesis that reminding individuals of their mortality would increase weapon bias as predicted by terror management theory (TMT, Greenberg, Pyszczynski, & Solomon, 1986). Prior research has shown that mortality salience (MS) increases both explicit prejudice (i.e. self-report questionnaires) and implicit bias (Bradley & Kennison, 2009). In this experiment, participants were
randomly assigned to either describe the emotions that the thought of their own death aroused in them (mortality salience, MS) or to describe their feelings toward an upcoming exam (control). All participants then completed a computer task where a picture of a White individual or a picture of a Black individual was flashed. This picture was followed by a picture of a hand tool or of a weapon. This task is referred to as the weapon bias task. Previous research has shown that individuals are more likely to misidentify a hand tool as a weapon when it is preceded by a picture of a Black (versus White) individual. The results of the experiment confirmed that weapon bias occurs more often in MS versus control conditions.

**Sequential Fractionation and Water Soluble Phosphorus Methods to Investigate Soil Phosphorus in a Long-term Manure Application**

Kaliana Tanganelli, Ana Carolina Soares, J. Clemn Turner, Jeffory Hattey

Department of Plant and Soil Sciences  
Oklahoma State University  
Subject Area: Environmental Sciences

Repeated applications of animal manure have been shown to increase of soil phosphorus (P), including water soluble P (WSP) forms which has the potential to be transported to nearby surface waters. Manure applied to fulfill crop nitrogen (N) requirements often results in an increased buildup of soil P. Increases to total soil P elevates the risk of greater WSP which can be subsequently be transported into waterways via erosion or runoff. Soil samples were collected from 0 -120 cm depth in a continuous cropped, conventionally tilled maize (Zea mays L.) production experiment that was initiated in 1995 at the Oklahoma Panhandle Research and Extension Center (OPREC) located in Goodwell, Oklahoma. Increases to WSP were significantly when soils were amended with beef manure at the surface; however anhydrous ammonia applications were similar to the control at all depth. A slight increase to surface WSP was observed in the swine effluent applications. Sequential fractionation showed that this increase of WSP was primarily due to P movement caused by irrigation. The importance of this field study was to assess the P movement and fate from long-term established animal manure management in semiarid ecosystems.

**Evaluation of Twenty Bermudagrass Cultivars for their Leaf Firing Resistance and Drought Resistance**

Santanu Thapa, Dennis Martin, Greg Bell, Jeff Anderson, Yanqi Wu and Justin Moss

Department of Horticulture and Landscape Architecture  
Oklahoma State University  
Subject Area: Biological Sciences

Bermudagrass is the most widely utilized turfgrass in Oklahoma and the southern U.S. Knowledge of the water use characteristics and relative drought tolerance response of bermudagrass varieties is crucial so that turfgrass managers can make informed variety selection and management decisions. The objectives of this research are to determine the leaf firing resistance and drought tolerance of twenty common and hybrid bermudagrasses. Leaf firing is often used as an indicator of a need for watering of landscape turf. Consequently, identification of cultivars with delayed leaf firing may reduce the use of irrigation in lawns. In this work bermudagrass cultivars are grown simulating a typical home lawn. Grasses are being exposed to severe drought stress under controlled conditions inside a greenhouse. Parameters being monitored are turfgrass quality, percent living cover, leaf firing resistance, normalized difference vegetation index, and soil water content. The experiment will be conducted three times using a completely randomized design. The average number of days required to reach the midpoint of each parameter will be compared amongst the various cultivars. Results will be made available to professional turfgrass managers as well as consumer to aid in selection of drought hardy and water use efficient varieties.
Comparison of Absolute and Relative Upper Body Peak Power in Division I College Football Players

Brennan Thompson, Doug Smith, Eric Ryan, Ryan Fiddler, Lee Everett, Bert Jacobson

Department of Health and Human Performance
Oklahoma State University
Subject Area: Education

Peak power levels may be indicative of successful performance in collegiate football players. Given the different demands of each position in football, absolute and relative peak power may vary among these positions. The purpose of the present study was to examine the relationship between bench press absolute and relative peak power among different positions in collegiate football players. Fourteen lineman and 11 skill position players performed a multiple repetition bench press at 50% of their 1 repetition-maximum (1-RM). During each repetition, each participant was instructed to move the barbell as fast as possible during the concentric action of the movement. Peak power was derived from the repetition that produced the highest power value. Absolute peak power values were significantly greater for lineman when compared to the skill position group but there were no differences between groups in relative peak power. These findings suggest that absolute bench press peak power values are greater in lineman when compared to skill position players. However, these differences no longer exist when normalized to body mass.

Coverage of Diversity in Introductory Psychology Textbooks

Lawrence Tran, Curtis, J., Bradley, K. I., & Kennison, S. M.

Department of Psychology
Oklahoma State University
Subject Area: Social Sciences

Prior research has shown that textbooks for introductory psychology have low coverage of topics related to diversity (Hogben & Waterman, 1997). In 2003, Trimble, Stevenson, and Worrell authored a report of the APA Commission on Ethnic Minority Recruitment, Retention, and Training Task Force (CEMRRAT2 TF) Textbook Initiative Work Group. The report recommended that introductory psychology courses should be “infused” with diversity content on topics, such as aging, gender, race, sexual orientation, and disabilities. The report also suggested that faculty members should play an active role in searching for textbooks with comprehensive content of diversity. The present research aimed to assess the current amount of diversity coverage in Introductory Psychology textbooks in order to see how they compare to the APA recommendations of 2003. We selected 20 textbooks published since 2005. For each book, we recorded the number of pages on which diversity topics were covered. The results showed that the coverage of diversity topics remains sparse in most books. Across all books, the most neglected topics were disability and sexual orientation. The topic of culture received the most covered followed by gender, race/ethnicity, and aging.

Ambient mercury and autism rates: A case study of New Jersey

Cindy Waterhouse and Steve Blanchard, PhD

Scholar Symposium Participant
Scholar from Our Lady of the Lake University
Subject Area: Social Sciences

The study assessed the association between ambient mercury and the risk of autism in New Jersey using state-of-the-art assessments of mercury in ambient air provided by the U.S. Environmental Protection Agency and rates of autism at the unified school district and county levels. Geographic information systems were used to map the ecological relationship between the spatial structure of the ambient mercury and the spatial structure of the risk of autism. Point sources of ambient mercury emissions were identified and mapped.
Using an Improvement-Oriented Framework: Evaluating OSU-Tulsa Library's Facility and Services Utilizing the CIPP Evaluation Model

Lisa Weis and Mary Walker
College of Education
Oklahoma State University
Subject Area: Education

This evaluation assessed and reported data utilizing Stufflebeam’s CIPP evaluation model focused on improving programs with respect to the program’s context, input, process, and product. Data was collected from the OSU-Tulsa student population regarding their experiences and opinions with the facility and services provided by the OSU-Tulsa library associated primarily with information retrieval and programs. The data was collected employing a direct recruitment method via an online survey and analyzed using descriptive statistics. The findings were shared with the program director to assist her in gauging the needs of the OSU-Tulsa students, identifying programs for refinement or creation, prioritizing areas of concern, and identifying possible areas for growth.

Health Benefits of Meditation in Practice

Jerry White and Dr. Conrad Woolsey
Department of Health Education and Health Promotion
Oklahoma State University
Subject Area: Education

Medicine and medical technology continue to improve, yet the prevalence of preventable chronic health conditions continues to increase. Personality traits and lifestyle choices are crucial predictors to the development and successful treatment of many chronic health conditions. However, traditional medicine still tends to underemphasize the mind-body-health connection. The science of psychoneuroimmunology and numerous studies on stress indicate that our perceptions and understandings of emotional responses are critical to the development and successful treatment of illnesses. A plethora of research shows meditation is a highly effective cognitive control strategy to counteract unhealthy stress and emotions, but it is still seldomly prescribed. Meditation can be described as a physiological state characterized by reduced metabolic activity that elicits physical and mental relaxation. Meditation reduces stress and anxiety, cognitive distortions (demandingness or excessive frustration), and many other unhealthy mindsets (Kang, Choi, & Ryu, 2008; Sears & Kraus, 2009). Meditation also improves hope, optimism, well-being, self-esteem, life satisfaction and self-actualization (Sears & Kraus, 2009; Brown & Ryan, 2003). With strong scientific support for the use of meditation, it is time for this technique to be more widely implemented to prevent chronic health conditions and help patients live healthier happier lives.

The Role of Coaching by Teaching Artists for Arts-Infused Social Studies: What Project CREATES Has to Offer

Ruth Wilcox, Stacey Bridges, and Diane Montgomery
Department of Educational Psychology
Oklahoma State University
Subject Area: Education

One strategy used by Project CREATES to enhance the fusion of social studies with the arts was to provide various forms of professional development to artists and teachers (authors, 2007), including seminars, book clubs, and on-site Arts Resource Coaches. The purpose of this study was to describe the role of the coaches as they worked to infuse the arts in elementary school curricula, specifically social studies for fifth graders. Using qualitative methods, data included interviews, artifacts, field notes, and observations. Themes that emerged from the analysis included four types of connections resulting in school culture changes. Two types of connections to the curriculum were found, including facilitating lesson plans that have local, state,
or national content standards and facilitating the implementation of evidence-based instructional practices. Additionally, coaches assured the collaboration and connections between teachers and artists, and they were catalyst for connecting community artists and arts agencies to the schools. In so doing, the coach acted as the catalyst for change to the school culture and teacher transformation. Implications for professional development of teachers and artists are presented.

Beyond the Comfort Zone: Teachers’ Perception of Placement of African American and Hispanic Learners

John Williams and Gwendolyn Mukes, Ph.D.
Scholar Symposium Participant
Scholar from Wichita State University
Subject Area: Education

African American and Hispanic learners are grossly under-represented in gifted education in public schools (Davis & Rimm, 1998). Therefore, this pilot research study sought to further examine teachers’ levels of awareness of gifted qualities in minority learners. The specific objectives of the study will describe (1) teachers’ knowledge of alternative assessment tools that correctly identify gifted qualities in African Americans and Hispanic Learners; (2) teachers’ knowledge of traditional assessment tools that are used to identify gifted qualities in students; (3) dispositions of teachers toward minority male learners’ capabilities; (4) levels of training that teachers have received that would enable them to identify gifted minority learners in a more accurate and equitable manner; and (5) teachers’ perception of minority children’s propensity towards special education placement.

Development of Assessment Tools for a Psychosocial Educational Grief Group

Jasmine Wilson and Sara Sander, LSW
Scholar Symposium Participant
Scholar from Jackson State University
Subject Area: Social Sciences

Alzheimer's disease is the most common form of dementia among older adults. According to statistics by the Alzheimer's Association, there are 5.3 million people in the United States are living with this degenerative condition. Because Alzheimer's is not a normal process of aging, diagnosed individuals require assistance from some type of caregiver as the disease progresses. Establishing and maintaining daily routines can prove difficult and can create frustration, aggression, and other negativity in diagnosed individuals, which adversely impacts the caregiver. The proposed research will evaluate through assessment forms the effectiveness of a psychoeducational grief group and the impact it has on short and long-term emotional physical health outcomes of Alzheimer's and related dementia caregivers.

Leadership Change at a Historically Black University Athletic Department: Organizational Impacts

John Winters
School of Applied Health and Educational Psychology
Oklahoma State University
Subject Area: Education

This study analyzes the impact of leadership change upon an intercollegiate athletic department at a small historically black university. The central question concerns whether change of leadership from outside the university community can create a positive atmosphere for this athletic department. The basis for analysis is in-depth interviews with principle individuals directly involved with the athletic program using inductive
analysis questioning and critical case sampling to select study participants. Case study, thematic analysis was utilized to interpret the perceptions of satisfaction of stakeholders as a result of the leadership change. Student-athletes and their coaching staffs have greeted this change with great satisfaction. Alumni groups and booster clubs are re-energized by the change of the model for athletic director resulting in unprecedented general athletic fund-raising. This study could serve as a guide for university administrators and athletic directors to manage future selections of new athletic directors by 'planned change'.

**Aqueous extraction of wheat germ oil**

**Meizhen Xie, Nurhan Dunford, Carla Goad**

School of Biosystems and Agricultural Engineering
Oklahoma State University
Subject Area: Biological Sciences

The efficiency of aqueous extraction process (AEP) to recover oil from wheat germ was investigated. The effect of pH on oil extraction yield was studied. High oil yields were obtained at high pH. Response Surface Methodology was applied to investigate the effects of processing parameters (liquid: solid ratio and extraction time), and optimize the aqueous oil extraction process at pH 8. The results showed that the highest oil yield (about 70%) was obtained at liquid solid ratio of 20 and extraction time of 0.5 h. This study demonstrated the potential of AEP as a viable technique to recover oil from wheat germ.

**Thixotropic Rheology of Concentrated Alumina Colloidal Gels for Solid Freeform Fabrication**

**Cheng Zhu and James E. Smay**

School of Chemical Engineering
Oklahoma State University
Subject Area: Physical Sciences & Technology

The aim of this project is to present the thixotropic rheology of viscoelastic concentrated colloidal gels used as ink materials for direct-write assembly of 3D structures. Both inks extrusion flow during direct-write process and structures shape evolution after deposition occurs only in several few seconds. Thus, the thixotropic rheology of colloidal inks over short duration is of significance from the prospective of flow dynamics and shape evolution. From a microstructure perspective, the gel network is a collection of closely packed flocs, which are fractal aggregation of colloidal particles. The inks thixotropic behavior theoretically depends on time-dependent rupture, attrition and restructuring processes of gels network under different shear rates. Here, concentrated Alumina (Al2O3) colloidal gels were employed as a model ink material. The classic structural kinetic theory was applied to quantify the microstructure evolution during the shear flow. A time-dependent constitutive equation was developed by incorporating the structural kinetics to describe unsteady state shear process. The shear rate step change experiments and hysteresis experiments were carried out to regress the model parameters and validate the model prediction capability. The simulation results showed satisfactory agreements with the collected data. This model could have practical uses in the simulation of flow behavior of colloidal gels during extrusion process.
Realtime Human Daily Activity Recognition through Fusion of Motion and Location Data

Chun Zhu and Weihua Sheng
School of Electrical and Computer Engineering
Oklahoma State University
Subject Area: Biomedical Sciences

In this paper, we proposed an approach to indoor human daily activity recognition which combines motion data and location information. One inertial sensor is worn on the right thigh of a human subject to provide motion data, while an optical motion capture system is used to record the human location information. Such a combination has the advantage of significantly reducing the obtrusiveness to the human subject at a moderate cost of vision processing, while maintaining a high accuracy of recognition. First, a two-step algorithm is proposed to recognize the activity based on motion data only. In the coarse-grained classification, two neural networks are used to classify the basic activities. In the fine-grained classification, the sequence of activities is modeled by an HMM to consider the sequential constraints. The modified short-time Viterbi algorithm is used for real-time daily activity recognition. Second, to fuse the motion data with the location information, Bayes' theorem is used to update the activities recognized from the motion data. We conducted experiments in a mock apartment and the obtained results proved the effectiveness and accuracy of our algorithms.