



***Paper***

***Abstracts***

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## **Removing the Barriers of E-Procurement Adoption: The Role of Trust and Commitment**

**Amjad Abu ElSamen**

**Department of Marketing**

**Oklahoma State University**

**Presentation Subject Area: Physical Sciences and Technology**

This article develops a model to explain the potential relationships that influence the barriers of electronic procurement techniques adoption. I have developed a theoretical model based on social exchange theory to explain how the barriers of e-procurement adoption in firms could be removed. While some of the major constructs in my model (perceived barriers, trust, and commitment in relationship between buyer-seller) have been explored in prior research in the context of e-procurement and/or e-business, prior research has typically considered direct effects of these constructs. The model incorporates those direct effects, but, more importantly, I also examine the presence of indirect effects (such as the indirect effect of trust via commitment on e-procurement adoption), moderating effects (such as the moderating effect of trust on perceived barriers influence on e-procurement). Also I consider the moderating effects of the type of products being procured (direct versus indirect) and the type of buying situation (straight rebuy, modified rebuy, and new buy) on the relationships between perceived barriers and e-procurement adoption.

I believe that the delineation of these paths among these constructs in the e-procurement context is an important contribution to development of knowledge in this field. Of course, I have considered the presence of these paths based on prior findings in the literature and theory. However, the real proof of whether this model adequately captures the intricacies inherent in the e-procurement adoption decision by firms must wait future research to empirically test and validate my model using a field-survey.

## **LDAP Module for Users Authentication**

**Luis Avila**

**McNair Scholars Program from St. Edward's University**

**Presentation Subject Area: Physical Sciences & Technology**

Currently, the St. Edward's University Computer Science System has a secure login for their computer science students and faculty. Users are permitted to securely login remotely using a secure shell or locally through a terminal with their username and password. The user authentication and permissions strictly depends on the control of the Debian GNU/Linux operating system by the system administrator. To allow more flexibility, a module was developed to authenticate users to the computer science LDAP (Lightweight Directory Access Protocol) directory. An LDAP directory is a special kind of database that holds information in a tree structure such as organizations, individuals, and other attributes. The module which uses PHP 3.0 with LDAP provides web application authentication services based on the username and password used on the computer science system. As time permits, the module will be interfaced with the computer science website and the exit survey website.

## **It Kind of Makes You Think: Using Dialogue Journals with Preservice Teachers and 8th Graders**

**Jacqueline Bach**  
**Department of Education**  
**Oklahoma State University**  
**Presentation Subject Area: Education**

As many schools seek ways of increasing reading scores, administrators and teachers are turning toward silent sustained reading, purchasing expensive reading and testing programs, such as Accelerated Reader, and creating new courses as a means of improving scores. But according to reading experts, these methods alone may not be enough to improve students' reading comprehension and other literacy skills (Atwell, 1987). The purpose of this study then was to consider the ways in which pre-service English teachers discuss and ask students about literature and to identify which questions and journal prompts motivate eighth grade students to respond and reflect on what they are reading.

Reading and discussing these journals with our students allowed the researchers to understand how better to motivate our students to talk about not just what they are reading at the moment but connect many of their other reading experiences. In this way, we learned more about our students as human beings who already possess many of the skills necessary to 'unlock the mysteries of rhetoric and style' as long as we create ways for them to realize this skill.

The participants in this study were 23 pre-service English teachers enrolled in a young adult literature course and 47 eighth grade students from a local junior high school. Each participant read either *The Outsiders* or *That Was Then, This Is Now*, both by S.E. Hinton. The pre-service teachers learned the importance of formulating questions, the interests of adolescents, and the wide range of reading and writing levels in one classroom. The eighth grade students modeled their partners' strategies about discussing literature, revealed how the readings were relevant to their lives, and illustrated entries that sometimes surpassed the level of the pre-service teachers' expressions of the text. The researchers both learned ways to incorporate these conversations into our classroom discussions in order to enrich our and our students' experiences with the text. The researcher will present excerpts from these journals which illustrate participants engaging in a richer experience with the text and each other.

## **The Role of '54 Dependent Transcriptional Activators in the Virulence and Fitness of *Pseudomonas Syringae* pv. Tomato DC3000**

**Christy Baker and Carol L. Bender**  
**Department of Entomology and Plant Pathology**  
**Oklahoma State University**  
**Presentation Subject Area: Biological Sciences**

*Pseudomonas syringae* pv. *tomato* DC3000 (*Pst* DC3000), a gram-negative plant pathogenic bacterium that is virulent on tomato, *Arabidopsis* and *Brassica* spp., is a model organism for studying plant-microbe interactions. The alternative sigma factor  $\sigma^{54}$  is encoded by *rpoN* and is required for various functions in *Pst* DC3000. Activator proteins, or bacterial enhancer-binding proteins (EBPs), are regulatory proteins that interact with  $\sigma^{54}$  to activate transcription of genes involved in metabolic and physiological processes. Many aspects of virulence in *Pst* DC3000 are controlled by  $\sigma^{54}$ , and the majority of the target genes have yet to be identified in this pathogen. In the present study, mutations were constructed in *fleQ*, *algB*, and *dctD2*, which belong to the NtrC family of activators, and control the synthesis of flagella, alginate production, and the uptake/transport of C<sub>4</sub> dicarboxylic acids, respectively (Arora et al. 1997; Deretic et. al., 1987; Goldberg and

Ohman 1987). In the current study, the *fleQ*, *algB*, and *dctD2* mutants of *Pst* DC3000 were characterized for traits associated with each activator and evaluated with respect to virulence and ability to elicit a hypersensitive response (HR) on non-host plants. The *Pst* DC3000 *fleQ* mutant was non-motile and non-flagellated, but there was no apparent role for *fleQ* in the virulence of *Pst* DC3000 on host plants (tomato and Arabidopsis) or in the HR on non-host (tobacco) plants. The *Pst* DC3000 *algB* mutant was impaired in pathogenicity on Arabidopsis, suggesting a potential role for alginate in virulence, whereas the *Pst* DC3000 *dctD2* mutant was impaired in the transport and/or utilization of succinic acid. Studies are underway to further characterize these mutants to more fully understand the role of NtrC family activators on gene expression in *Pst* DC3000.

## **Levels and Determinants of Child Malnutrition in Tigray, Northern Ethiopia.**

**Afewerk Bezabih, Dr Fitsum Hagos, Dr Barbara Stoecker, Dr Gideon Kruseman, Dr Vincent Linderhof, Mr. Zenebe Abraha, Dr Mekonen Yohanes, and Girmay G. Samuel**

**Department of Nutritional Science**

**Oklahoma State University**

**Presentation Subject Area: Biomedical Sciences**

This study was part of a project investigating effects of water harvesting schemes on the nutritional status of children, adolescent girls and mothers from Tigray in northern Ethiopia. A community-based cross sectional survey included 321 under-five children and their mothers. More than 90% of the mothers were illiterate. Most reported home delivery; major first feeds for infants were butter, sugar and water at 47%, 15% and 15%, respectively, with only 16% receiving colostrum as the first feed. Only 19% of mothers reported beginning breastfeeding within the first hour of delivery. Breastfeeding continued for one year or longer for 88%. Children were reported to be healthy by 69% of the mothers. Among the locally available complementary foods, cereal-based porridge was commonly used. We used height-for-age, weight-for-age, and weight-for-height as indicators of child nutritional status. The rates of stunting (low height-for-age,  $\leq -2$  Z-score), underweight (low weight-for-age,  $\leq -2$  Z) and wasting (low weight-for-height,  $\leq -2$  Z) were 42.7%, 38.3% and 13.4%, respectively. Both height-for-age and weight-for age were positively associated with complementary feeding of cereal-based porridge ( $p < 0.01$ ). A positive association between weight-for-height of the children and body mass index (BMI) of the mothers ( $p = 0.002$ ) was also observed. Numbers of children stunted and underweight increased with child age. Suboptimal complementary feeding was a major contributor to high malnutrition rates in the region. Educating mothers about exclusive breastfeeding and the timely initiation, preparation and provision of energy dense complementary foods from locally available foods is recommended.

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## **Viability of PKU Mice**

**Christina Bower and Dr. David McDonald**

**McNair Scholars Program from Wichita State University**

**Presentation Subject Area: Biological Sciences**

*Phenylketonuria* (PKU) is a metabolic disorder in which phenylalanine (phe) is not correctly converted into tyrosine (tyr). This disorder causes an excess of phe to accumulate in the blood, which can cause mental retardation and other debilitating affects. In this study, mice were used as a model to study PKU. Matings

were performed with a male homozygous mutant genotype and a female heterozygous mutant genotype. The sex and phenotype were collected when mouse pups were weaned from their mother. The data were analyzed to investigate the hypothesis that mutant PKU mice will have a survival rate at weaning no lower or higher than that of non-PKU mice. The results indicated that the null hypothesis was rejected. There was a significant drop in mouse survival of PKU mutants compared to that of non-PKU mice. One possible explanation is that PKU mutant mice are runted at birth so they compete for attention and food; however it is unclear at this time what the definitive cause may be. This may be uncovered upon further research

## **An investigation into the Helminth Parasites of Testudines of Southern Oklahoma**

**Carol Bratt, LeeAnn Bowerman, Don Lee, and Kenneth D. Andrews**

**McNair Scholars Program from East Central University**

**Presentation Subject Area: Biological Sciences**

Testudines are a heavily parasitized group of poikilotherms and are commonly host to multiple species infections. There is a paucity of current data on the helminth parasites of Oklahoma Testudines. Much of the available data is in excess of fifty years old. Our findings show much needed information on parasites of Oklahoma Testudines and adds to the current knowledge. This will provide data for further studies.

In this study, a total of fifty Red-Eared slider turtles (*Trachemys scripta elegans*) were collected from five counties in Southern Oklahoma as well as two counties in Eastern Texas. These were dissected, size and sex recorded, and all organs were inspected for parasites. Parasites were preserved in a formalin solution. Representative samples of each type of parasite found from each host were stained and histologically prepared for study.

We are currently identifying these representative parasites to a specific level. Upon completion of identification, density of each species within *Trachemys scripta elegans* will be tabulated. Data will also be tabulated to provide information on parasite prevalence and frequency with relation to age and sex of the Testudines as well as a regional correlation of species. This data will be compared with previously recorded information to show changes in parasite density, abundance, prevalence, and incidence. We also expect to be able to show differentiation of the parasitic community of *Trachemys scripta elegans* based on the geographical location of the host.

## **Assessing Water Quality Impacts of Shoreline Septic Systems on Grand Lake Reservoir**

**Kevin Burgess, Dr. Joe Bidwell and Dr. Darrell Townsend**

**Department of Zoology**

**Oklahoma State University**

**Presentation Subject Area: Environmental Sciences**

Grand Lake is an 18,616 hectare reservoir located in north- western Oklahoma. A large number of both seasonal and permanent dwellings exist around the shoreline of the lake, with some of these areas still serviced by private sewage treatment systems (septic systems). As septic systems age, they have the potential to fail which could lead to the input of nutrients, bacteria and pathogens to the lake. The objective of this study is to identify sites around Grand Lake that may be sources of septic input and to use a suite of

water quality parameters to determine if septic leachate is entering the system near these sites. County records will be evaluated in order to classify shoreline septic systems by age and failing systems will be detected using a helicopter mounted Infermetrics 445G MKII FLIR (Forward Looking Infrared Imaging) system. Water quality parameters evaluated include nutrients, dissolved oxygen, pH, temperature, conductivity, and total/fecal coliform on a monthly basis. Preliminary data using the detergent assay have successfully indicated septic input into the lake.

## **A Study of Highly Important Competencies as Perceived by Restaurant Leaders**

**Belinda Butler**

**Department of Hotel & Restaurant Administration**

**Oklahoma State University**

**Presentation Subject Area: Environmental Sciences**

This paper uses the vast research done on essential competencies in the hospitality industry, primarily the hotel sector, as a platform for exploring the current essential competencies that operations and human resources leaders are looking for when hiring new managers in the restaurant industry.

The purpose of this study is: 1) to identify a list of key competencies necessary for restaurant managers to possess in the quick service, fast-casual, casual dining, and fine dining segments; 2) to analyze the differences in competency importance levels among the four restaurant segments; 3) to analyze the differences in competency importance levels between operations and human resources leaders; 4) to analyze the differences in competency importance levels between operations and human resources leaders within the quick service, fast-casual, casual, and fine dining restaurant segments.

The research design for this study will be to conduct a focus group of 8-10 operations and human resources leaders from the quick service, fast-casual, casual dining, and fine dining segments who will identify an initial list of competencies for the survey. A sample web-based survey instrument will be created and will be divided into four sections: 1) rating of competencies, 2) attitudinal questions regarding competencies, 3) restaurants' operational characteristics, and 4) respondents' demographics. Next, a pilot test will be conducted using the sample survey. The total number of respondents for the pilot will be a total of 64 operations and restaurants leaders from the four dining segments of this study. Consequently, the Delphi technique will be used for gaining consensus on the final list of competencies from this panel of industry experts.

The data analysis for this study will include an analysis of variance (ANOVA) to compare means for each competency among the quick service, fast-casual, casual dining, and fine dining segments and for comparing the means for each competency between operations and human resource leaders within the four dining segments. A sample t-test for means analysis will be used to see whether there is a significant mean difference for each competency between human resources and operations leaders.

The benefit of this study is three-fold. First, the results will provide restaurant leaders (operations and human resources) with a current list of essential competencies for restaurant managers to possess or develop. Second, the results will provide organizations with a clear understanding of whether their operations and human resources leaders are aligned on the competencies they perceive as important when hiring new restaurant managers. Third, the results of this study will give restaurant leaders a snapshot of those competencies that may be considered equally important across the four dining segments; thus giving credence to hiring new managers with diverse restaurant segment experience.

## **Propaganda Analysis: A case study of the U.S. Department of Education's campaign promoting the No Child Left Behind Act**

**Bonnie Ann Cain**  
**Department of Journalism & Broadcasting**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

Propaganda permeates our society; it is found in our politics, news and education. These three arenas came together in 2003 when Ketchum, a public relations firm under contract with the U.S. Department of Education, cut a deal with Armstrong Williams, a news commentator and public relations executive, to promote the program No Child Left Behind.

When news of the deal broke, it was immediately debated by the media, public relations industry, government and general public. One side defends the campaign as a legal outreach program; the other condemns it as 'covert propaganda.' This is a highly controversial situation that could represent an illegal use of public funds if it proves to be propaganda. In the very least, it will change the way public relations and government outreach are perceived by the public and hopefully the way they work together in the future.

The purpose of this study is to provide a thorough and comprehensive examination of the campaign. This will be accomplished by subjecting it to Jowett and O'Donnell's 10-point propaganda framework. This framework is based on a composite of accepted definitions of propaganda and examines the campaign based on 1) ideology and purpose, 2) context, 3) identification of the propagandist, 4) propaganda organization structure, 5) audience, 6) media utilized, 7) techniques used, 8) audience reaction, 9) counter-propaganda and 10) effects and evaluation. Arguments that the campaign is an example of propaganda will be supported or opposed based on how closely the campaign meets the framework's expectations of propaganda.

This case study will provide a backdrop for discussion of other related questions such as what role should public relations firms play in promoting government policy. What aspects of this analysis can be applied to similar government contracts, and what aspects are unique only to this case? Do any guidelines for future government public relations contracts emerge?

## **The Effects of Attachment Styles on Racial Prejudice**

**Jarice Carr and Steven Schuetz**  
**McNair Scholar from the University of Central Oklahoma**  
**Presentation Subject Area: Minority Issues**

Attachment styles focus on how early relationships with caregivers effect emotion regulation and feelings of safety. The purpose of this study is to identify if there is any correlation between attachment styles and racial bias. This study surveyed 58 college students from a Midwestern university using the Relationship Scales Questionnaire and either the Attitudes Towards Whites Scale or the Attitudes Towards Blacks Scale. Significance was found in a number of areas. The results suggested that there is a correlation between patterns of attachment and racial prejudice.

## **Urban, Ethnic Mosaics: An Analysis of Residential Perspectives from Third Ward, Houston, Texas.**

**Chandra Carrasco**  
**Department of Geography**  
**Oklahoma State University**  
**Presentation Subject Area: Minority Issues**

While many sociological and geographical studies have focused on specific quantitative methodologies to understand the process and development of segregation, relatively little attention has been paid to the role of residential perspectives in urban communities. Additionally, urban, black communities are often burdened by ghetto connotations – the stigmatization of the built environment, and even the residents themselves, with stereotypes concerning socioeconomic status and perceived racial characteristics. This paper is a study of community and non-community perspectives in the urban, ethnic neighborhood of Third Ward, Houston, Texas. This study of the southern located Third Ward provides insight into the importance of historical and temporal differences in the continuation and establishment of ghettos. The use of both quantitative and qualitative strategies proves to be vital as the methodologies allows for the analysis of internal and external perspectives on neighborhood life in Third Ward. Due to the experiential research conducted, it was revealed that residents were deeply invested in improving their community but were also leery of gentrification and neighborhood fragmentation as the result of many new residents. Additionally many residents expressed concern with the lack of availability of commercial businesses and retail establishments. Investigating an urban, ethnic neighborhood from a local, community perspective can work to reveal valuable residential opinions that could aid in the development of long-term community sustainability strategies.

## **The Actions of Molybdenum Oxides in Heavy Metals Remediation**

**Mohamed Chehbouni and A.W. Apblett**  
**Department of Chemistry**  
**Oklahoma State University**  
**Presentation Subject Area: Environmental Sciences**

Molybdenum Oxide is an excellent tool to remove heavy metals from aqueous solutions. A novel environmental friendly method was developed, in which molybdenum oxides was reacted with aqueous solutions of metal salts. In the case of uranium,  $\text{MoO}_3$  could absorb up to 165% by weight of the heavy metal when reacted with uranyl acetate. The insoluble product was identified as the mineral umohoite  $[(\text{UO}_2)\text{MoO}_4(\text{H}_2\text{O})](\text{H}_2\text{O})$ . A regeneration process was successfully achieved, in which uranium and molybdenum trioxide were recovered from the uranium molybdenum oxide hydrate product. The recovery of molybdenum oxide was 98.9 % by weight and the efficiency of separation of uranium from umohoite was 96.1 % by weight. When applying the same technique to transition metals, and alkaline-earth metals, the products obtained after heating at moderate temperature were in the form of  $\text{MMoO}_4$  (M= Mn, Co, Zn, Cd, Pd, Ca, Sr, Ba). The latter are widely used as heterogeneous catalysts for several oxidation processes.

## **Recognizing the Club Member Perspectives of the Service Quality**

**Yung-hui Chu, Daron Southerland, Ru-jian Wang, and Jerrold K. Leong**  
**Department of Hotel and Restaurant Administration**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

The purpose of this study is to identify the perceptions and expectations of food and service quality in the Stillwater Country Club, Oklahoma from the perspective of the members. The specific objectives of this study are: (1) to identify the difference between the members' perceptions and demographic variables; (2) to identify the difference between the members' expectations and demographic variables; and (3) to determine the key factors of the service quality dimensions.

The SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1985; 1988; 1991) was employed and self-administered questionnaires were distributed to members who dined in at the Country Club restaurant. One-way ANOVA analysis with Tukey tests were employed for recognition which attributes had mean difference between members' perceptions and expectation with demographic variables. A principal component analysis with varimax rotation was used to identify the dimensions of service quality.

The results indicated that there were differences between members' perceptions and their demographics, such as gender and responsiveness, as well as household income and responsiveness. The further Tukey Tests indicated that the perception of tangible had significant difference such as between 1-5 years and 11-15 years of member, as well as the perception of responsiveness between under \$34,999 and \$55,000-\$64,999 household income. However, there were no significant differences between members' perceptions and age as well as occupation.

In addition, there were differences between members' expectations and their demographics, such as age and responsiveness; years of member and responsiveness as well as assurance. The further Tukey Tests indicated that the expectation of responsiveness had significant difference between under 25 and 56-65 year-old; the expectation of responsiveness between under \$34,999 and \$55,000-\$64,999 household income. However, there were no significant differences between members' expectations and occupation.

The results of factor analysis were indicated that the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) was .941 and the Bartlett's Test of Sphericity value (Chi-Square) was 1686.096, significant at  $p=.000$ . The new factors were suggested: (a) service provider confidence and food quality; and (b) dining environment and atmosphere. The composite reliability test indicated that the reliability coefficients for these two factors were .949 and .926 respectively.

Four implications were based on the findings. First, the perceptions of tangible between the years of member were different. Managers may be open-minded to seek for answers from different groups of members. Second, the perceptions of responsiveness between the household income between the groups under \$34,999 and \$55,000-\$64,999 had differences. Managers may focus on these two groups and ask for their comments. Third, the expectations between responsiveness and age, gender, as well as household income were different. Managers may develop plans and focus on responsiveness attributes. Finally, managers may need to focus their efforts on service quality attributes. Thus, building confidence, maintaining quality standards, listening, and providing employee training, end results would be higher service quality, member satisfaction, and exceeding members' expectations.

## **Evaluating the Effect of Natural Materials to Reduce Nitrogen, Phosphorous, and Total Suspended Solids Coming Off a Watershed**

**Lisa Costantino and Tim Canfield**

**McNair Scholars Program from East Central University**

**Presentation Subject Area: Environmental Sciences**

Nutrients (primarily nitrogen and phosphorous) and suspended solids are primary stressors associated with national water quality. Agriculture in the United States is a main contributor of nutrients and sediments in the nation's waters. Surface and percolated agricultural runoff accumulates nutrients and suspended solids as they flow through soil to finally collect in streams. The focus of this study was to evaluate the capacity of natural materials to filter stressors from surface water flow. Natural materials such as gravel, sand, dry and preconditioned leaves, hay, and limestone were chosen to construct 27 filtration chambers. The selection of these materials was based on their ready availability to landowners. Water for the study was collected from the Washita River located in Tishimingo, Oklahoma due to its obvious turbidity. Each of the filtration chambers was preconditioned with twelve liters of RO water, of which the last two were collected and analyzed for preliminary data. At each successive sampling, two and a half liters of Washita River water was filtered and sampled, with control samples collected for comparison. Spectrophotometry evaluated the concentration of total dissolved nutrients. A turbidity meter evaluated total suspended solids (TSS) while titrations were performed to determine alkalinity and hardness and field meters measured conductivity and dissolved oxygen. Results revealed the presence of an extended preconditioning period followed by a downward trend of the parameters being measured.

## **African-American Couples and Race Related Stressors**

**Veronica Crafton**

**McNair Scholars Program from Georgia State University**

**Presentation Subject Area: Minority Issues**

This study researches how African/African-American couples deal and interact with racial stress. The couples are being recruited through mailing and presentations to historically Black fraternities and sororities, college alumni, churches. Participants will be asked to fill our surveys and have a video-taped conversation about a race-related issue or stressor that they have experienced. They will also be asked to talk about a race-related issue that they disagree on and to come to a resolution of the disagreement. Currently there are no results from this study because we are still in the process of gathering participants. Researches hope to gain information about how African/African-America couples cope with racial issues, how it affects them individually as well as within their relationship. We also hope to determine if there are any differences based on demographic background.

## **The 21st Century Education Challenge of Oklahoma: Are We Prepared for Limited English Proficient Students?**

**Lionel Dabbs**

**McNair Scholars Program from Cameron University**

**Presentation Subject Area: Humanities**

The 2000 U.S. Census revealed that the foreign-born population had increased more than 100 percent since 1990 in Oklahoma. Of this population, 36,000 persons above the age of five spoke English with either some difficulty or not at all. Analyzing immigrant population growth in Oklahoma counties and exploring the connection of this growth to the number of students classified as Limited English Proficient (LEP), this research will provide possible explanations for the recent decrease in the number of students being reported as LEP. Furthermore, it will examine the ratio of ESL certified teachers to LEP students, the ESL requirements teachers must fulfill to teach LEP students, the latest reported number of LEP students reclassified as English proficient, and will suggest future research that may be needed to better understand ESL issues in Oklahoma.

## **Effects of early and late fall calving on cow performance and weaning weight of calves**

**Michael Davis, D. W. Kastner, I. Rubio, N. M. Long, R. P. Wettemann, Oklahoma**

**Agricultural Experimental Station**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

Mature Angus x Hereford cows were used to determine the optimal time for fall calving in Oklahoma. Cows (n=60) were blocked by age and randomly assigned to early (E, Aug-Sept) and (L Oct-Nov) calving groups. During each of the 4 years, E and L cows were AI in early November or early January, respectively, and the same two sires were used for both treatments. Cows were exposed to two fertile bulls from d 12 to d 48 after AI. Cows were maintained in calving groups, grazed native range pastures, and were rotated among 4 pastures every 2 wk. The same total amount of supplemental protein was fed during the winter to each treatment, but amount fed each month was altered to achieve body condition score (BCS) 5 at breeding and 4 at weaning. Calves were weaned at 9 months of age. Ovulation was synchronized by treatment with GnRH and the insertion of a controlled release intravaginal device (CIDR; Pfizer) on d 0, injection with prostaglandin F<sub>2</sub> (Lutalyse; Pfizer) and CIDR removed on d 7, and treatment with GnRH and AI on d 9. Early cows had greater (P < 0.05) BCS at AI than L cows (E = 5.6, .01, L = 5.2, .01) and L cows had greater (P < 0.05) BCS at weaning than E cows (E = 4.7, .01, L = 5.5, .01). AI pregnancy rate (E = 34%, L = 32%) and total pregnancy rate (E = 87%, L = 92%) were not influenced by treatment. Gestation length was longer (P < 0.05) in L cows than E cows (L = 281.33, 1, E = 278.26, 1). Month of calving did not influence postpartum interval to AI or birth weight of calves. Weaning weights of L calves were heavier (P < 0.05) than E calves (E = 227, 4, L = 282, 4 kg). Late cows weaned more pounds of calf with no effect on pregnancy rate. Cumulative effect of calving month on reproductive will be evaluated.

## **Religion: The Power to Control Society**

**Phillip Davis**

**McNair Scholars Program from Coppin State University**

**Presentation Subject Area: Minority Issues**

Religion is defined as a personal set or institutionalized system of attitudes, beliefs, and practices. In many cases, religion has positive effects on the educational, political, and moral development of a community; however, it may also be used to impose the goals and the agendas of those in power. Religion is the primary method for establishing social and political infrastructures in cities, states, and countries. The effectiveness of a religion is determined by its reception by the citizens and their adherence to its requirements. In the ancient cities of Mali and Askum, the acceptance of a religious state changed the course of both empires. In each case, changes were determined by the method through which the religion was imposed. In Africa, a continent separated by European imperialism and economical rape, the Christian and Islamic religions have survived and have had a great impact on society. Askum, now known as Ethiopia, is a very Christian civilization. On the other hand, Mali, a West African city that existed during the 13th century, is Islamic. In both cases, foreign religions entered an African city-state and changed the development of the society. This study reviews secondary historical works regarding Ancient African civilizations to demonstrate the connection between the sociological and the political changes that the acceptance of religions produced.

## **16S rDNA-Based Evaluation of Fluctuations in Rumen Microbial Populations in Response to Sub Acute Ruminal Acidosis in Cattle**

**Samodha Fernando, Hebbie T. Purvis<sup>1</sup>, II, Kristy Rutz<sup>1</sup>, Fares Z. Najjar<sup>2</sup>, Bruce A. Roe<sup>2</sup>, Udaya DeSilva<sup>1</sup>**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Biological Sciences**

*Ruminal acidosis* is considered to be one of the most important nutritional disorders in the feedlot and dairy industries today. The economic impact of the losses due to sub acute acidosis is estimated to be around billion dollars in the dairy industry alone. We evaluated the corresponding fluctuations in rumen microbial population dynamics as animals contracted sub acute *ruminal acidosis* (SARA) in an experimental setting. Eight multi-cannulated beef steers (510 ± 20 kg) were utilized in a Latin square design experiment. Steers were randomly assigned to two treatment groups (n=4); Control (prairie hay) and Experimental (gradually increased high-concentrate diets with 2.0, 2.4, 2.7, and 3.0 Mcal of ME/Kg of DM). Two animals on the high energy diet were challenged with 1.2g/Kg body weight of corn to experimentally induce SARA.

A 800bp fragment of the microbial 16S rRNA gene was PCR amplified and the microbial population structure and diversity were assessed using Terminal Restriction Length Polymorphism (T-RFLP) and was analyzed using the Phylogenetic Analysis Tool (PAT) software. To identify the major contributors of sub acute *ruminal acidosis*, 16S rDNA libraries were constructed from both animals with induced SARA and control animals on high energy diet during critical stages of pH change and were sequenced. The sequence analysis shows significant increases in *Proteobacteria* (0.8% to 23.1%) and *Actinobacteria* (0.3% to 7.3%) populations, and significant decreases in *Firmicutes* (36.1% to 21.9%), *Spirochaetes* (4.4% to 0.0) *Bacteroidetes* (44.3% to 31.0%) populations.

<sup>1</sup> Oklahoma State University, Department of Animal Science, Stillwater, OK 74078

<sup>2</sup> University of Oklahoma, Department of Chemistry, Norman

## **Evaluation Of Rumen Microbial Fluctuations In Response To Sub Acute Ruminant Acidosis using 16S rDNA Profiles**

**Samodha Fernando, Hebbie T. Purvis<sup>1</sup>, II, Kristy Rutz<sup>1</sup>, Fares Z. Najjar<sup>2</sup>, Bruce A. Roe<sup>2</sup>, Udaya DeSilv**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

Ruminal acidosis is considered to be one of the most important nutritional disorders in the feedlot and dairy industries today. The economic impact of the losses due to sub acute acidosis is estimated to be around billion dollars in the dairy industry alone. We evaluated the corresponding fluctuations in rumen microbial population dynamics as animals contracted sub acute ruminal acidosis (SARA) in an experimental setting. Eight multi-cannulated beef steers (510 ± 20 kg) were utilized in a Latin square design experiment. Steers were randomly assigned to two treatment groups (n=4); Control (prairie hay) and Experimental (gradually increased high-concentrate diets with 2.0, 2.4, 2.7, and 3.0 Mcal of ME/Kg of DM). Two animals on the high energy diet were challenged with 1.2g/Kg body weight of corn to experimentally induce SARA.

A 800bp fragment of the microbial 16S rRNA gene was PCR amplified and the microbial population structure and diversity were assessed using Terminal Restriction Length Polymorphism (T-RFLP) and was analyzed using the Phylogenetic Analysis Tool (PAT) software. To identify the major contributors of sub acute ruminal acidosis, 16S rDNA libraries were constructed from both animals with induced SARA and control animals on high energy diet during critical stages of pH change and were sequenced. The sequence analysis shows significant increases in Proteobacteria (0.8% to 23.1%) and Actinobacteria (0.3% to 7.3%) populations, and significant decreases in Firmicutes (36.1% to 21.9), Spirochaetes (4.4% to 0.0) Bacteroidetes (44.3% to 31.0%) populations.

<sup>1</sup> Oklahoma State University, Department of Animal Science, Stillwater, OK 74078

<sup>2</sup> University of Oklahoma, Department of Chemistry, Norman

## **Selections from the Leora Stroup Collection..Kakemono from the Edo Period of Japan 1615-1868**

**Linda Fleming**

**Department of International Studies**

**Oklahoma State University**

**Presentation Subject Area: Humanities**

The Leora Stroup Collection of Japanese paintings and artifacts, bequeathed to Fort Hays State University in 2002, has neither been researched nor published. This thesis chose four kakemono of the eclectic collection, indicative of the diversity of Japan's Edo period (1615-1868), to research with the purpose of substantiating Leora Stroup's attributions of artist, school, and date. Jurojin, a figural painting of the Japanese god of longevity derived from the Chinese Taoist Zhang Guolao, is attributed to the Unkoku School with unknown artist and date. This thesis discusses the origins and history of Jurojin, and the rich iconography, style, and painting techniques of this Japanese work, challenging the dating. Cherry Blossoms and Leaves and Flowers and Leaves, kakemono of the 'bird and flower' category, attributed to Sakai Hichi, appear to be the work of the samurai artist who revived the Kyoto art of the Rinpa style in Edo, Sakai Hitsu (1761-1828). Hitsu's biography is traced, as well as the history of 'bird and flower' painting. Comparisons are made to known Sakai Hitsu paintings to establish dating and Hitsu as artist of the Stroup Collection works. Plum Orchard, a landscape attributed to the literati Okada Hank; (1782-1846), is compared to known Okada Hank; paintings with the inclusion of Hank's biography and the historical development of the literati style, first in

China, and then Japan. The findings of three Japanese translators, sought to decipher the seven seals, signature, and calligraphy of Plum Orchard, affirm a date of 1854 written with a poem, a title, and other artists' names, but all do not confirm Okada Hank; as artist. The diversity of the art of this period is reflective of the dynamic change occurring in this pre-modern time of Japanese history.

## **Minority College Students Attitudes towards Seeking Psychological Help.**

**Mimi Getachew, Clarissa Felder, Rochelle Rush, and Matt Smith**

**McNair Scholars Program from North Carolina A&T State University**

**Presentation Subject Area: Minority Issues**

It is well known that ethnic minorities underutilize professional psychological services. According to psychological data, minorities do not utilize professional counselors at the rate of their European counterparts (Patterson, 1996). Over 50 percent of African Americans, Native Americans, and Asian Americans fail to return to counseling after one visit, while 30 percent of whites fail to return (Patterson). Various reasons for minority reluctance to seek counseling exist. For example, cultural teachings from birth, including finding solutions to personal problems within the home or subgroup have been labeled as major factors (Whaley, 2001). Furthermore, some minorities have had unpleasant experiences with professionals, such as school counselors. One response to such treatment may be loss of trust in all mental health professionals and/or low self-disclosure (Whaley). These beliefs may have been founded hundreds of years ago when many individuals, such as African Americans and Native Americans, were forced to migrate to the United States or to specific areas of the country. As a result, professionals who fail to take time to learn about various cultures greatly limit their ability to counsel minorities (Patterson, 1996). The behaviors of professionals and clients became more lucid when viewed through Social Learning Theory. Albert Bandura's Social Learning Theory (SLT), suggests that people learn from one another. This theory is a combination of classical and operant conditioning. With SLT, behavior is influenced by stimulus events, external reinforcement and cognitive mediational processes (Corey, 2001). Bandura suggests that personalities grow from life learning experiences more so than genetic or psychological processes (Corey). In an article published in 1977 about the theory, Bandura stated that most human behavior is learned observationally through modeling; from observing others, one forms an idea of how new behaviors are performed, and on later occasions, this coded information serves as a guide for action? (Karunanayake & Nauta, 2004, p. 22). Social Learning Theory also suggests that people are often reinforced for modeling by other individuals and their environment. In an effort to determine if SLT actually applies to various areas of a child's life as Bandura asserts, this research seeks to prove that there are no relationships between college students' attitudes toward seeking professional psychological help and their mothers, education levels, age, gender, or previous counseling experience.

## **Monitoring Surface Temperature on Biological Tissues by Infrared Thermography**

**Surya Gnyawali, Yichao Chen, Kenneth E Bartels, J. P Wicksted, and Wei R Chen\***

**Department of Physics**

**Oklahoma State University**

**Presentation Subject Area: Biomedical Sciences**

Surface temperature measurement using infrared thermography enables identifying the malignancies, inflammation, and infections showing hot spots or asymmetrical temperature profiles. We experiment biological I tissue samples such as live mice with Basal Cell Carcinoma (BCC) tumors for surface temperature study. Samples injected with light absorption enhancing dye indocyanine green (ICG) and

immunoadjuvant glycosylated chitosan (GC) are irradiated by near infrared (NIR) laser light of wavelength 805 nm. The samples are exposed to infrared thermography during the photothermal therapy to acquire images. The analyzed data will be presented and discussed.

## **Electrodynamics of a Gauss Gun**

**Erik Gonzales**

**McNair Scholars Program from East Central University**

**Presentation Subject Area: Physical Sciences & Technology**

Abstract not submitted.

## **Winter Rye Pasture Based Production Programs for Growing Beef Cattle**

**Kristin Hales, E. M. Whitley, G. W. Horn, and D. M. Childs**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

This experiment was conducted near Burneyville, Oklahoma during the winter of 2004-2005 to determine the effect of different production programs on cattle performance while grazing winter pasture. Three hundred forty-one crossbred steers (initial BW=212 ± 5 kg) and fifteen rye pastures were used in a completely randomized design with 3 replicates per treatment. Steers were randomly assigned to treatments as follows: 1) negative control; steers grazed rye pasture (2.7steers/ha) and were allowed ad libitum access to rye hay; 2, 3 and 4) steers grazed rye pasture at stocking rates of 4.7, 6.2, and 7.4 steers/ha, respectively, and had ad libitum access to soybean hulls, 5) positive control; steers grazed rye pasture at stocking rates to result in forage mass of 840kg/ha and were allowed ad libitum access to rye hay. Data were analyzed on a pasture basis using least squares analysis (SAS, 1990) with orthogonal contrasts on treatments 2, 3, and 4 that included the effect of stocking rate which was divided into linear and quadratic effects. A direct comparison of stocking rate compared negative control vs positive control treatments. Average daily gains and gain/steer were not different (P=0.76), whereas gain/ha increased in a linear manner (P<0.01) as stocking rate increased. Mean daily soybean hull intake (as-fed basis) across treatments ranged from 5.2 to 6.2 kg/steer (SEM=0.20), and intake of soybean hulls increased linearly (P<0.01) as stocking rate increased and forage availability decreased. Hay intake increased quadratically (P<0.01) as a result of increased stocking rate. Additionally, negative control vs positive control hay intake was significantly different (P<0.01), while gain/ha was not. The use of soybean hulls allowed stocking rates to be substantially increased over the negative and positive controls, and greater beef production per hectare. Feedyard performance of the cattle and an economic analysis of the different production programs will also be presented.

## **Sororities and High Risk Drinking: Which Comes First?**

**Rachael Horton and Thad R. Leffingwell, Ph.D.**

**Department of Psychology**

**Oklahoma State University**

**Presentation Subject Area: Social Sciences**

An estimated 90% of college students engage in alcohol consumption behaviors (Lo and Globetti 1995). Further, 44 % of students engage in binge drinking (Marlatt, Baer, Kivlahan, Dimeff, Larimer, Quigley, Somers & Williams, 1998). Statistics for consumption levels of members of fraternities and sororities far outweigh those of typical students. Furthermore, increased drinking levels and increased numbers of negative consequences are also experienced by those who merely express the intent to affiliate with Greek organizations (Read, Wood, Davidoff, McLacken & Campbell, 2002; Harrington, Brigham & Clayton, 1997; Canterbury, Gressard, Vieweg, Grossman, Westerman & McKelway, 1990). A major factor correlated with problematic college drinking is normative misperceptions. That is, many students believe that levels of alcohol consumption for the 'typical student' are much higher than is actually the case. This may be especially problematic within the Greek population. These students have been found to hold even higher norms for drinking. Thus, individuals who try to be more like their misperception of the norm may increase already problematic levels of drinking. However, there is relatively little support on how normative perceptions and drinking behaviors vary across different sororities and fraternities. Some support has been shown for the traditionally held hypothesis that socialization within Greek organizations creates higher consumption levels among its members. However, there has been more support for the hypothesis that students enter college already drinking at high levels and then seek out environments which will supportive of their drinking levels. The current study examined only students who self-selected themselves into the recruitment process. It was hypothesized that students who pledged sororities would change normative perceptions, as well as individual attitudes and behaviors to become more like the group they most closely associate with. Individuals who do not pledge Greek organizations are expected to choose reference groups similar to their current attitudes and behaviors and thus will display less change. In the current study, 191 college female students who wished to join sororities completed a 12 item questionnaire about their personal drinking behaviors and attitudes toward drinking. The questionnaire also asked participants to estimate a typical sorority member's drinking attitudes and behaviors. Questionnaires were completed the first day of the fall 2004 sorority recruitment process and again approximately six weeks after completion of the recruitment process. Changes in potential sorority member drinking attitudes and behaviors were examined. Findings from the current study may suggest that changes in new sorority member's behaviors and attitudes concerning drinking may be neither as extreme nor as rapid as previously believed.

## **Sense of Place and the Wilderness Experience: A Sense of Home and Oneness During a 30-day Outdoor Leadership Program**

**Garrett Hutson**

**School of Applied Health and Educational Psychology**

**Oklahoma State University**

**Presentation Subject Area: Education**

This study explored the concept of sense of place during a 30-day National Outdoor Leadership School (NOLS) extended wilderness experience in a mountain range in the western United States. Sense of place is not a fixed concept, but may be best understood as a moving force that touches people's emotions on a variety of levels. Scholars of leisure, recreation and outdoor education are increasingly utilizing this concept because it holistically captures the value of person-place engagement. The purpose of the study was to describe individuals' sense of place within a wilderness experience. One primary research question guided

this study: How do NOLS course participants (students and instructors) define their sense of place throughout an extended wilderness experience? The research question was addressed using a phenomenological framework. This method was utilized in order to illuminate the various meanings that person-place engagement held for the participants. The study included informal, in-depth, individual, semi-structured personal interviews with 14 NOLS course participants (students and instructors) over a single 30-day NOLS instructor course. All interviews were audio recorded and transcribed by the researcher who was a student on the course. Transcripts were read repeatedly to discern patterns and analyzed using a coding frame that emerged from the study of the narratives. The study revealed two core themes: (1) the meaning of the phenomena was recognized as participants' awareness of their relationships with the place. This awareness acted as an avenue through which the second core theme developed in which; (2) the deeper meaning of the phenomena was recognized as a sense of connectedness. Connectedness was articulated as feeling at home, experiencing oneness, sensing a strengthened spirituality and undergoing transformation. The findings from this study may help outdoor educators to further understand the role that sense of place has within wilderness experiences. Outdoor educators may then be able to better facilitate meaningful and sustainable outdoor experiences for all of those who work, visit, live and recreate in some of our world's most sacred places.

## **Attributional Style and Posttraumatic Growth**

**Melissa Jackson and Matt Gray, Ph.D.**

**Department of Psychology**

**Oklahoma State University**

**Presentation Subject Area: Social Sciences**

People have an innate need to assign meanings to events that are perceivably uncontrollable. The meaning assigned to potentially traumatic experiences may pose as a source of vulnerability for the development of posttraumatic stress disorder (PTSD). People who blame themselves for a traumatic event and believe that the world is an essentially dangerous place may be more prone to developing PTSD symptomatology. Conversely, people who do not blame themselves for a traumatic event and accept the event as something not likely to re-occur maybe less likely to experience significant distress post-trauma. A person who endorses this optimistic attribution may also be able assign positive meaning to the traumatic event and grow post-trauma, as opposed to a pessimistic attributionist who accepts the event with self-blame and a fatalistic outlook. The purpose of this study was to examine the relationship between attributions given for traumatic and non-traumatic situations and the implications that these attributional tendencies have for posttraumatic growth. Trauma-exposed participants were asked to write narratives about three types of life events (pleasant, neutral, and traumatic), which were analyzed by trained judges for attributional style. Participants were also asked to fill out the Attributional Style Questionnaire, which measures dispositional attributional style, and the Posttraumatic Growth Inventory. Multiple regression analyses will be used to determine whether PTG is significantly predicted by dispositional attributional style and event-specific attributions. If a relationship is found, the results of this study could have significant implications for cognitive therapy approaches to treating victims of traumatic events. Data has been collected and will be analyzed during the spring semester of 2006.

## **Investigating the Relationship Between Amount of Exercise and Incidence of Addictive and/or Obsessive Compulsive and Narcissistic Personality Traits**

**Crishel Kline and Dr. Robert Zettle**

**McNair Scholars Program from Wichita State University**

**Presentation Subject Area: Social Sciences**

The relationship between different exercise groups and specific personality characteristics was investigated. A total of 145 participants took part in the study. All participants completed the Personal Experiences Questionnaire, which consisted of 123 items total. Of those items, ten pertained to the exercise category of the participant. The remaining items were randomly assigned in a forced-choice true/false format that were designed to assess characteristics of narcissistic personality, addictive personality, and obsessive-compulsive personality. Four groups of exercisers were derived from the data gathered: nonexercisers, moderate exercisers, intense exercisers, and competitive bodybuilders. No significant differences were found among the four groups of exercisers on the previously mentioned personality variables, which conflicts with findings from other studies that have documented elevated levels of narcissism among competitive bodybuilders. Bodybuilders participating in this project, however, were significantly older than the other three groups of exercisers and bodybuilders evaluated in other studies, suggesting that the psychological functions served by bodybuilding may vary by age.

## **Influence of Dietary Manipulation on DM, N, and P Excretion of Pigs During an Entire Finishing Period**

**Mariela Lachmann, S. D. Carter, S. K. Jenkins, J. S. Bundy, and Z. Marable**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

A total of 48 Yorkshire barrows (30.2 kg BW) was used to determine the effect of reducing dietary CP and P on DM, N, and P excretion during a 112-d finishing period. Pigs were blocked by BW and allotted randomly to two dietary treatments. Pigs were housed in an environmentally-controlled building divided into 4 identical rooms (12 pigs/room, 2 rooms/trt) with each having a shallow pit, pull plug system. A fortified corn-soybean meal-based diet served as the control (18, 16, and 14% CP; 0.50, 0.45, and 0.40% P for Phases 1, 2, and 3, respectively). The experimental diet (LPP) was similar to the control diet with the exception that CP was reduced by 4% units and P by 0.1% units. Both diets were formulated on true dig. Lys (0.83, 0.71, and 0.58%), and Thr, Met, and Trp were added to LPP on an ideal basis. Pigs and feeders were weighed weekly, and pit volume and pH were measured. Weekly feed and pit samples were collected for DM, N, and P analysis. The avg concentration of DM (0.55%) in the pit was similar ( $P > 0.10$ ), but N (12.6 vs. 7.4%) and P (2.47 vs. 1.90%), on a DM basis, were reduced ( $P < 0.02$ ) for pigs fed LPP. Pit pH (7.0 vs. 6.2) tended to decrease ( $P < 0.08$ ) with LPP. Days on test increased ( $P < 0.05$ ) for pigs fed LPP (105 vs. 112 d), but final weight (108.3 kg) and DMI (1.86 kg/d) were not affected ( $P > 0.1$ ). However, N (53 vs. 38 g/d) and P (9.3 vs. 7.1 g/d) intakes were reduced ( $P < 0.01$ ) for pigs fed LPP. Daily DM excreted was similar ( $P > 0.1$ ) between diets (274 vs. 269 g/d). Pigs fed LPP had a marked decrease ( $P < 0.05$ ) in N (34.7 vs. 20.6 g/d) and P (6.8 vs. 5.1 g/d) excreted. Excretion (% of intake) was similar ( $P > 0.10$ ) for DM (14.5%) and P (72%), but N tended to be reduced ( $P < 0.10$ ) for pigs fed LPP (65 vs. 53%). For pigs fed LPP, cumulative N and P excreted for the entire 112-d period tended to be reduced ( $P < 0.10$ ) by 1.59 and 0.139 kg/pig. Based on these results, the LPP diet reduced daily and total N and P excreted by 40 and 25%, respectively, during a 112-day finishing period.

## **Dynamic Population Size in PSO-based Multiobjective Optimization**

**Wen Fung Leong, Wen-Fung Leong and Gary G. Yen**

**Department of Electrical and Computer Engineering**

**Oklahoma State University**

**Presentation Subject Area: Physical Sciences & Technology**

Most existing multiobjective particle swarm optimization (MOPSO) designs generally ‘estimate’ a fixed population size sufficiently to explore the search space without incurring excessive computational complexity. In this paper, we propose a MOPSO design to solve multiobjective optimization problems, known as the dynamic population multiple-swarm MOPSO (DMOPSO). The proposed algorithm incorporates strategies to adjust the population size to enhance exploration capability. An additional feature, adaptive local archive, is designed to improve the diversity within each swarm. Compared with some state-of-the-art MOPSO algorithms, the proposed algorithm shows competitive results with improved diversity and convergence.

## **Effect of Prenatal Nutrition of Calves on Postpartum Growth and Endocrine Function**

**Nathan Long, M. P. Davis, M. J. Prado-Cooper, and R. P. Wettemann**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

**Oklahoma Agricultural Experiment Station, Stillwater**

Hereford x Angus multiparous cows (n=21), at approximately 60 d of gestation, were randomly assigned to diets to determine the effect of prepartum nutrition on postnatal growth and endocrine function of calves. High cows (H; n=10; nonlactating) grazed native grass pasture from July 30 to Nov. 10 with ad libitum access to a 50% concentrate, 50% roughage diet. Low cows (L; n=11) grazed pasture and calves were weaned on Oct. 18. After 103 d of treatment, (H = 733, 59 kg, body condition score [BCS] 7., 0.4; L = 478, 30 kg, BCS 4.3, 0.2;  $P < 0.001$ ) L and H cows grazed the same dormant grass pasture with 1.4 kg/d of a 40% CP supplement before, and 1.8 kg after calving. At weaning (7 mo), H cows were heavier ( $P < 0.001$ , 631, 42 kg) compared with L cows (561 ± 34 kg); and had greater BCS ( $P < 0.001$ , 5.4, 0.4 and 4.8, 0.3 for H and L, respectively). Prenatal nutrition did not influence birth or weaning weights. At 41 d after weaning, calves were confined in pens and fed 4.2 kg/d of a 16.2 % CP, 60.4% TDN ration. Postweaning growth rates were similar for H and L calves. Blood samples (10 mL) were collected via jugular puncture on d 0, 1, 2, 3, 4, 6, and 8; dexamethasone (40 µg/kg) was given on d 1. Concentrations of cortisol (d 1 = 16.1, 2 ng/mL) decreased ( $P < 0.01$ ) during d 2 to 6 after treatment (cortisol < 0.1 ng/ml) and were not influenced by prenatal nutrition. Plasma concentrations of glucose, insulin, and IGF-1 were not influenced ( $P > 0.10$ ) by prenatal nutrition. Plasma concentrations of glucose and insulin increased ( $P < 0.001$ ) from 84.0, 2.8 mg/dL and 1.7, 0.3 ng/mL, respectively, on d 1 to 93.1, 2.8 mg/dL and 5.7, 0.3 ng/mL, respectively, on d 3. Concentrations of IGF-1 decreased ( $P < 0.001$ ) from 71.3, 8.8 ng/mL on d 1 to 57.2, 8.8 ng/mL on d 3. Increased nutrient intake of cows during mid-gestation did not influence growth rate of calves or concentrations of glucose, insulin, or IGF-1 in plasma after weaning.

## **Degree Plan Online Interface**

**Jorge Loredano and Dr. Laura Baker**  
**McNair Scholar from St. Edward's University**  
**Presentation Subject Area: Social Sciences**

During the past few years the advising process at St. Edwards University has been a complicated ordeal. Advisors have to keep track of many degree plans in hard copies. Since the amount of degree plans is enormous, the purpose of this project is to facilitate the advising process and the distribution of degree plans in academic services. This project creates an online interface for advisors and students to facilitate the advising process. The advisor has the simple task of downloading degree plans in PDF format from online interface. This allows academic services to manage this interface easily. The main components of this project were to implement a database containing information of many different majors in specific departments. A website was implemented where the user can have access to the database. In order to keep organization and security in this interface, the whole site was implemented in scripting language PHP and a database management system my SQL where the site makes connection to the database to request for degree plans

## **Caenorhabditis Elegans daf-2 Mutants Versus Wildtype Longevity When Exposed to Foreign Pathogens**

**Jessica Mauricio**  
**McNair Scholars Program from St. Edward's University**  
**Presentation Subject Area: Biological Sciences**

In the nematode *Caenorhabditis elegans*, dauer formation, stress resistance, longevity are determined in part by the DAF-2 protein. Mutations in the *daf-2* gene are associated with an increase in longevity and an advanced resistance to heat. Recently it was discovered that *C. elegans* possesses an innate immune system. The main objective of this research was to observe if the *daf-2* mutants would maintain their longevity when exposed to pathogenic bacteria under stressful conditions. Also, through the research I planned to determine whether or not the worm's innate immune system was in any part responsible for this resistance to pathogenicity. My research showed an increased life expectancy for the *daf-2* mutants even in a stressed environment. However, more assays are required in order to deduce that this result is indeed from a more efficient immune system.

## **Functional Genomics of Cold Tolerance in Bermudagrass (*Cynodon dactylon* L.)**

**Kalpalatha Melmaiee, Sathya Elavarthi, Michael P. Anderson, Patricia Ayoubi, and Arron C. Guenzi**  
**Department of Plant and Soil Sciences**  
**Oklahoma State University**  
**Presentation Subject Area: Biological Sciences**

Bermudagrass (*Cynodon dactylon* L.pers.) is one of the most widely adapted warm-season grasses with its usage and geographic distribution limited by cold temperature. The goal of this research was to identify genes that are differentially expressed during cold acclimation in two bermudagrass genotypes that differ in tolerance to low temperature stress, including: the cold tolerant cultivar 'MSU' and cold sensitive experimental line 'Zebra'. Plants were cold acclimated at 8°C/2°C day/night temperatures. Crown tissues

were sampled at 2 and 28 days after cold acclimation from both acclimated and non-acclimated plants. Total RNA was extracted from crown tissues and suppression subtraction hybridization (SSH) was performed to create eight normalized cDNA libraries enriched for expressed sequence tags (ESTs) representing up or down regulated genes. A total of 3,853 clones were isolated from the eight cDNA libraries and sequenced. 2,200 unique clones were identified using CAP3 program. All the ESTs were deposited in the GenBank database and assigned putative functions using the BLASTX algorithm. Differential gene expression profiles were identified by microarray analysis. Genes discovered in this study will have value in developing molecular markers to assist in breeding for cold tolerance and/or provide candidate genes for transgenic manipulation to improve cold tolerance in this economically important grass species.

## **RUDRKN 2NITE?: Cellular Text Messaging Prompts for Alcohol Harm-Reduction on Campus**

**Joe Mignogna, Melissa Jackson, and Thad Leffingwell**  
**Department of Psychology**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

Alcohol use among college students is a serious problem. Alcohol Skills Training Programs (ASTP) that instruct students in behavioral methods for minimizing intoxication and reducing risks associated with alcohol use have been found to be moderately effective at reducing consumption and associated consequences. The effectiveness of this approach may be limited by the ability of targeted students to recall and implement the strategies in the drinking context. The purpose of this study was to examine the possible beneficial effects cellular phone text messaging could have on self-regulation of drinking behavior among college students. It was predicted that sending students text messages on high-frequency drinking nights (i.e., Thursday, Friday, and Saturday) with specific behavioral tips on how to moderate consumption and drink more responsibly would decrease the quantity of alcohol consumed. Students identified as 'high-risk drinkers' completed a baseline packet with questions about their quantity and frequency of alcohol consumption, and received a 30-minute alcohol informational intervention on skills and strategies for drinking alcohol in moderation. Also, students were taught how to compute their own blood alcohol level (BAL), and received a pocket-sized BAL card (personalized for weight and gender) to aid in achieving a safer BAL during drinking occasions. After the session, participants were randomly assigned to one of two groups. One group received text messages following the intervention and the other did not. The text messages were sent hourly between the hours of 5 pm and 1 am, on the high-frequency drinking nights. The messages contained reminders of the behavioral strategies presented during the initial didactic session, such as, eat before you drink alcohol, and ,Count your drinks. Keep bottle caps, following the intervention, both groups completed an online questionnaire measuring the frequency and quantity of alcohol they consumed each night. While no statistically significant findings emerge for total number of drinks or peak BAL for any evening, the results of this small pilot study are encouraging. For both total drinks and peak BAL, the trends on each evening were in the hypothesized direction of reduced alcohol use and less intoxication with small effect sizes ( $d = .09$  ,  $.35$ ). Given the small sample size and substantial within-group variability, it is not surprising that these effects did not achieve statistical significance.

## **In Vitro Sensitivity of Cardiac and Brain Cholinesterases to Organophosphorus Insecticides in Adult and Aged Rats**

**Nikita Mirajkar and Carey N. Pope**  
**Department of Veterinary Physiological Sciences**  
**Oklahoma State University**  
**Presentation Subject Area: Biomedical Sciences**

Organophosphates (OPs) are among the most commonly used pesticides in the US and worldwide. The primary mechanism of toxicity of OPs is through the inhibition of acetylcholinesterase (AChE), a key enzyme involved in the hydrolysis of the neurotransmitter, acetylcholine. This leads to signs of cholinergic toxicity consisting of autonomic dysfunction, involuntary movements and cardiorespiratory alterations. It is well known that marked age-related differences in sensitivity exist for some OPs. While neurotoxicity from exposure to various OPs has been extensively studied, the effects of OPs on cardiac function have received considerably less research attention. In the present study, we evaluated the in vitro sensitivity of adult and aged rat brain (cortex) and heart to the active metabolites of two common OPs, chlorpyrifos oxon (CPO) and methyl paraoxon (MePO). Studies with specific inhibitors for acetylcholinesterase (BW 284 C51) and a related enzyme with no known physiological function, butyrylcholinesterase (BChE) (tetraisopropylpyrophosphoramidate) indicated that in both age groups, majority of cholinesterase activity in the cortex is AChE (88% AChE and 12% BChE), while in the heart, there is more BChE activity (12% AChE and 88% BChE). In addition, we found that for CPO in the heart, the IC<sub>50</sub> of AChE (31.53 nM in adult and 35.46 nM in aged) was significantly higher than that of BChE (8.47 nM in adult and 3.27 nM in aged). While there was no age-related difference in sensitivity of AChE to CPO, it was seen that the BChE in the aged rat heart was significantly more sensitive to CPO than BChE in the adult heart (~ 2.5 fold). Similarly, it was observed that for CPO in the cortex of both age groups, the IC<sub>50</sub> of AChE (6.64 nM in adult and 7.21 nM in aged) was significantly higher than that of BChE (1.58 nM in adult and 0.69 nM in aged). In contrast, we found that for MePO, the IC<sub>50</sub> of AChE (25.68 nM in adult and 24.54 nM in aged) was significantly lower than that of BChE (50.83 nM in adult and 46.77 nM in aged) in the heart, with similar findings in the brain (IC<sub>50</sub> of AChE: 17.44 nM in adult and 17.87 nM in aged; IC<sub>50</sub> of BChE: 48.21 nM in adult and 32.62 nM in aged). There appeared to be no age-related difference in sensitivity of AChE or BChE to MePO in either tissue. These results suggest a differential interaction of CPO and MePO with AChE and BChE in tissues from adult and aging rats. These findings could be important because of both the potential for environmental exposures to insecticides and the use of cholinesterase inhibitors in the treatment of some diseases in the elderly.

## **Effects of Fire/Grazing Regimes on Tallgrass Prairie Plant Communities in Northern Oklahoma**

**Raymond Moranz, Dr. Sam Fuhlendorf, and Dr. David Engle**  
**Department of Plant and Soil Sciences**  
**Oklahoma State University**  
**Presentation Subject Area: Environmental Sciences**

Most tallgrass prairie rangelands are managed for homogeneity, which reduces their value for biodiversity conservation. Patch burning has been proposed as a novel approach for enhancing landscape heterogeneity, and has already been shown to increase populations of some imperiled grassland bird species. We tested the hypothesis that patch burning and grazing would result in tallgrass prairie plant communities that differed in composition from tallgrass prairies managed via the traditional fire/grazing regime in the Flint Hills of northeastern Oklahoma. Plant species composition data were collected in permanent plots at The Nature Conservancy's Tallgrass Prairie Preserve in the summers of 2004 and 2005. We performed detrended

correspondence analysis (DCA) and canonical correspondence analyses (CCA) to test for the effects of fire/grazing regime. We found that fire/grazing regime did influence plant species composition, though weakly, as the CCA axis representing fire/grazing regime explained only 4.2% of the cumulative % variation of the species data. Patch burning appears to favor a few disturbance-loving forb species such as *Artemisia ludoviciana* and *Amphiachyris dracunculoides* without having a major negative impact on the most important forage grasses.

## **Competitiveness of the U.S. Meats in Japan and South Korea A Source-Differentiated Market Study**

**Joao Mutondo**  
**Department of Agricultural Economics**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

Dynamic version of source-differentiated AIDS models for Japanese and South Korean meat demand are estimated using seemingly unrelated regression (SUR). The empirical results show that in general the U.S. meats are not sensitive to prices in Japan and South Korea. Income growth in Japan and South Korea may increase the demand for the U.S. produced meats (mainly beef and poultry). In Japanese market, the U.S. has competitive disadvantage in terms of its beef export to Japan compared to Australia. However, for poultry, the U.S. and Japan have competitive advantage compared to other supplying sources. In South Korean meat market, the U.S. has competitive advantage in terms of its beef compared to Australia. Among the major pork exporters (the U.S., Denmark and Canada) to South Korea, the U.S. has competitive advantage.

## **Assessing the Relationship between Manufacturing Agility, Intergroup Dynamics, and Incentives**

**Daniel Navarrese**  
**Department of Industrial Engineering and Management**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

This study explores the effects of intergroup cooperation, competition, and conflict, and the use of incentives on manufacturing agility. Manufacturing agility is defined as the ability of a manufacturing firm to succeed in a turbulent environment. Intergroup cooperation, competition, and conflict, and the number of different types of incentives utilized by a firm were explored as possible predictors of achieved agility. Data was obtained from a survey administered to a sample of manufacturing firms, predominately located in the United States, in 2005. Multiple regression analysis revealed that incentives and conflict accounted for about 15% of the variability in manufacturing agility. Cooperation and competition did not play a significant role in predicting agility. Also, the use of a varied number of incentives, an issue that continues to be highly controversial among consultants, practitioners, and scholars, did not seem to significantly influence cooperation or conflict.

## **The Recruitment and Retainment of Ethnic Minorities in School Psychology Graduate Programs**

**Brandi Newry**  
**School of Applied Health and Educational Psychology**  
**Oklahoma State University**  
**Presentation Subject Area: Minority Issues**

This paper is an extensive review of the literature regarding the recruitment and retainment of ethnic minorities in school psychology graduate training programs. During the last fifteen years, an increasing variety of forces have been impacting the field of school psychology. One main topic which has received a great deal of attention is not only the overall shortage of school psychologists but the shortage of ethnic minority school psychologists. This paper outlines a two-fold dilemma facing the field of school psychology: 1) the ethnic minority population shift of America's public schools in which most school psychologists are employed and 2) the far-reaching effect of the small percentage of ethnic minorities who actually apply and are accepted into graduate programs, specifically psychology graduate programs. This implies school psychology programs must address diversity issues by being enthusiastic about and purposeful in recruiting ethnic minorities, not only for the diversification of school psychology graduate training programs but to uphold professional ethics, the economic and professional survival of school psychology.

## **Designing a Masters Program in Hospitality Management: Preparing Leaders for the 21st Century & Beyond**

**Annamarie Nicely and Hialin Qu**  
**Department of Hotel and Restaurant Administration**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

As more institutions in the western hemisphere move from undergraduate colleges to research universities there will be a greater need for graduate programs. In the area of hospitality management, the demand for graduate degrees has been greater than supply (Lee, Cha & Kim, 2004). Some researchers believe that the addition of more hospitality management graduate degree programs is a step in the right direction as it will raise the quality of human resources in the industry and stimulate further research in the field. However this increase in hospitality management graduate programs has resulted in a decline in program quality. (Brownell & Jameson, 1995; Lee et al., 2004). The purpose of the study is to examine more recent strategies used by leading hospitality management schools in the US when designing hospitality management masters programs. With the aid of descriptive statistics, the paper will analyze the process, features and content of masters programs through an extensive literature and program website review of the hospitality management masters programs of six leading US schools in the field with the aim of establishing a framework which new hospitality management curriculum developers could use as a guide.

Brownell, J. & Jameson, D. (1995). Benchmarks for excellence-Cornell's management development program. *Cornell Hotel and Restaurant Administration Quarterly*, 36, 4.

Lee, D., Cha, S. & Kim, J. (2004). Hospitality programs in Korean graduate schools: why students select certain programs and competencies in the curriculum. *Journal of Human Resources in Hospitality & Tourism*. 3, 1, 33-45.

## **Characterization of pH Sensitive N-isopropylacrylamide (NIPA) Co-Polymers as an Emerging pH Sensing Technology**

**Leah Oxenford, Necati Kaval, Barry Lavine, and Richard Bunce**

**Department of Chemistry**

**Oklahoma State University**

**Presentation Subject Area: Physical Sciences & Technology**

The swelling behavior associated with the volume phase transition of functionalized *polyN-isopropylacrylamide* (NIPA) shows promise as a novel pH sensing technology. Lightly crosslinked polyNIPA microspheres were synthesized by free radical photopolymerization using functional monomers of increasing side chain length (acrylic acid, *methacrylic acid*, *ethacrylic acid*, and *propacrylic acid*). The pH sensitive microspheres were embedded in hydrogel membranes for characterization of their phase transition behavior. The apparent pKa of the polymer particles and their degree of swelling were characterized by turbidimetry. Structure property relationships will be discussed with application to pH sensing.

## **The Role of Adolescent Crime Fantasies on Property Crime Behaviors**

**Teketa Paschal,**

**McNair Scholar from the Wichita State University**

**Presentation Subject Area: Social Sciences**

This research examined the relationship between adolescent fantasies about committing property crime and actually committing the crime. The study addressed the following question: When adolescents think and fantasize about property crime, does their tendency to commit property crimes increase? For purposes of the study, a survey was administered to 31 participants, which included 19 females and 12 males. The participants were 7<sup>th</sup> and 8<sup>th</sup> grade students who were either attending a private Catholic school or a summer program at a Boy's and Girl's Club in an urban city in the Midwest. The survey included 19 items related to adolescent attitudes towards property crime and fantasizing about the crime. The findings were not statistically significant. Additionally, of the participants who reported that they had not thought about property crime, they more frequently reported that they had committed property crimes.

## **Bovine Somatotropin and a Greater Body Condition Increase IGF-I Secretion in Postpartum Beef Cows**

**Monica Prado-Cooper, I. Rubio, M.P. Davis, N. M. Long, R.P. Wettemann and L.J. Spicer.**

**Department of Animal Sciences,**

**Oklahoma State University**

**Presentation Subject Area: Whiteman competition**

Greater body condition score (BCS) at calving improves reproductive performance of beef cows, and treatment with *somatotropin* (bST) increases concentrations of IGF-I in plasma of cattle.

Postpartum, Angus x Hereford thin or moderate BCS cows, were used to determine the effect of bST on concentrations of IGF-I in plasma during early lactation.

During gestation, cows (n = 16) were fed to lose or maintain body weight and calve with thin (T; < 4.5) or

moderate (M;  $\geq 4.5$ ) BCS. Cows were blocked based on BCS at calving, and randomly assigned to a 2 x 2 factorial: T (3.9) or M (4.9) BCS, and treated twice with bST (250 mg; Posilac, bST) or saline (C). Cows were fed 1.8 kg/d of a 40% CP supplement and grass hay ad libitum. Blood samples were collected twice a week, starting 7 d before until 28 d after bST. Data were analyzed using the mixed procedure of SAS.

Concentrations of IGF-I in plasma were greater ( $P < 0.01$ ) in M compared with T cows before treatment. There was a tendency ( $P < 0.09$ ) of a BCS by bST interaction. M-bST cows had greater ( $P < 0.01$ ) concentrations of IGF-I in plasma (41.11 ng/mL), compared with M-C, T-bST, and T-C cows (20.2, 20.5, 16.1 ng/mL, respectively). Concentrations of glucose in plasma were greater ( $P < 0.01$ ) for M (71.9 mg/dL) compared with T (66.8 mg/dL) cows after treatment. Concentrations of insulin in plasma were not influenced by BCS or treatment with bST.

Greater concentrations of IGF-I in plasma of cows with greater BCS and in cows treated with bST may act to improve reproductive performance. Further studies are needed to evaluate the effects of nutrient intake, BCS and bST treatments on ovarian function and reproductive performance of beef cows.

## **A Phenomenological Understanding of Chemical Mechanical Polishing: From Pad Scale to Particle Scale**

**Prahalada Rao**  
**Department of Industrial Engineering and Management**  
**Oklahoma State University**  
**Presentation Subject Area:**

Material removal in CMP is a result of various complex interactions. Several physical regimes have been tested towards developing an understanding of the same. Asperity based models have currently gained prominence in that; several of the aforementioned interactions can be explained to a greater depth. These apart, researchers have developed elaborate mathematical models in an attempt to exert a better degree of control over the process.

Notwithstanding, we hold that certain aspects of these contact based models are essentially flawed. Chief among our objections is the portrayal of material removal as a micrometric scale phenomenon. Instead, we purport material removal to be essentially nanometric in nature. Secondly, we express difference in the mathematical modeling of material removal in CMP. Our research exemplifies a stochastic view of CMP rather than assuming independence amongst key inputs.

Our endeavor herein is to develop a thorough phenomenological understanding of CMP at various scales and suggest a different perception of the process. This we believe is the preliminary step before a mathematical treatment is forwarded – our ultimate objective.

\*\*Student Member, ASQ, APICS, INFORMS

\*This work is executed under the guidance of Dr R. Komanduri (MAE,OSU) and Dr S.T.S.Bukkapatnam (IEM,OSU), and with generous help from WenChen Lih (PhD Student,MAE).

## **The Effectiveness of Different Commercially Available Ultraviolet-B Light Sources for Successful Husbandry of the Green Anole (*Anolis Carolinensis*)**

**Nick Rasmussen and Matthew Lovern**

**Department of Zoology**

**Oklahoma State University**

**Presentation Subject Area: Biological Sciences**

Raising healthy adult green anoles (*Anolis carolinensis*) from eggs laid in captivity has proven to be exceedingly difficult, which is unfortunate because this lizard species is otherwise a useful model for a variety of research endeavors. We hypothesized that the lack of prior husbandry success was due primarily to insufficient levels of ultraviolet-B (UV-B) radiation under captive conditions and that lizards exposed to greater amounts of UV-B would show higher growth rates, fewer physical malformations, and a higher percentage of reproductive competence in adulthood. To test this, we set up two treatment groups, one with low UV-B output lights (Durotest Vita-Lite®,  $6\mu\text{W}/\text{cm}^2$ ) and one with high UV-B output lights (ZooMed ReptiSun 5.0®,  $67\mu\text{W}/\text{cm}^2$ ). Growth rates of lizards in the two groups were measured and compared during the first 5.5 mo of life. At about 5.5 mo of age, trials were conducted on a subset of lizards to determine whether they were expressing adult-typical behaviors indicative of sexual maturity. Our results indicate that there were few differences between lizards from the two treatment groups. In fact, lizards in both groups developed into healthy adults. Growth rates did not differ, and no lizard exhibited contextually inappropriate behavior during trials. Furthermore, copulations were observed in both treatment groups, however, only females from the high UV-B treatment group produced eggs. Thus, our data do not provide strong support for our hypothesis, though it is interesting that no eggs were produced by females from the low UV-B treatment group. We conclude that it is likely that factor(s) other than UV-B exposure have led to the lack of success in other labs. For example, it is possible that it was actually the vitamin and mineral supplementation regimen, which was the same for both of our treatment groups that resulted in our success.

## **Whitewoods: A Design of Sustainable Living for the Elderly**

**Leia Rehorn**

**Department of Design, Housing, and Merchandising**

**Oklahoma State University**

**Presentation Subject Area: Environmental Sciences**

It is important for elderly people to have a safe and clean environment to live in, especially due to their weakening immune systems. The purpose of this work is to design a sustainable assistant living apartment to provide a healthy and comfortable environment for the elderly. The sustainable design concepts applied in this work include the use of non-toxic interior materials and renewable energy. Healthy interior materials used in carpet, linoleum, paint, and fabrics can help prevent the side effects of toxins such as cancer and irritation of skin, eyes, nose, and throat. The use of indoor plants further improves indoor air quality. Energy flow of the establishment is designed using a combination of natural energy for lighting, heating and cooling and energy-efficient sub-floor heating and cooling system. So, energy will be saved, fewer harmful byproducts will be produced, and natural resources will be preserved. The space is also ADA (Americans with Disabilities Act) compliant to maximize the comfort of the resident and their mobility.

## **Development of a Spectrophotometric and Chemometric Method for the Direct Determination of Lipid Concentrations**

**Lisa Reilly, Neil Purdie, Barry Lavine, and A. David Marais**

**Department of Chemistry**

**Oklahoma State University**

**Presentation Subject Area: Physical Sciences & Technology**

Polyunsaturated fatty acids (PUFAs) and mono-unsaturated fatty acids (MUFAs) have become a focus in both nutritional sciences and medical studies in the evaluation of risk factors for cardiovascular diseases, dyslipidemias, diabetes, obesity, and other diseases. Studies have disclosed that unsaturated fatty acids can offer health benefits which include reducing cardiovascular death rates, lowering blood pressure, and promoting other positive health effects for patients. However, other studies have demonstrated the involvement of unsaturated fatty acids in oxidative stress and the development of atherosclerosis and other diseases. Competing methods for lipid measurements involve sophisticated instruments, either GC/MS or NMR, that are both time and labor intensive. With these known connections of fatty acids to various diseases, the development of a direct, inexpensive, and routine colorimetric assay for the measurement of the concentration of serum lipids would enable a complete study to incorporate fully the PUFAs as a risk factor for any disease. An accurate colorimetric method has been developed to routinely measure serum and synthetic mixture levels of cholesterol and PUFAs simultaneously. The color reagent is selective to  $-C-C=C-$  groups that result in a unique visible spectrum for cholesterol and six PUFAs: linoleic acid, conjugated linoleic acid, linolenic acid, arachidonic acid, EPA, and DHA. Resulting spectra generated at ambient temperature conditions for serum or prepared mixture samples are composites of all seven components. The only apparent interference in serum is from heme from lysed blood cells. The complex multi-component spectra that result from serum tests have been analyzed using the Generalized Standard Addition Method to measure the concentrations for all of the unsaturated lipids. Changes in the proportional amounts of the lipids from subject to subject lead to a wide range of spectral patterns that correlate with lipid dysfunctions. Pattern recognition methods have revealed a correlation between these patterns and established disease states. The method provides for a more comprehensive unsaturated lipids panel for serum, and represents a significant departure from the customary practice of measuring only cholesterol in its various lipoprotein fractions. The addition of quantitative data for individual fatty acids should be of significant importance in deriving future risk models that are more effective and should be investigated as additional prognostic markers for circulatory diseases.

## **Ecoplex - Sustainable Resource Management**

**Sandra Rodriguez-Piñeros**

**Department of Environmental Science**

**Oklahoma State University**

**Presentation Subject Area: Environmental Sciences**

Sustainability research has concentrated on the relationship between humans and nature. However, this research lacks a holistic and realistic conceptualization of this relationship. A new conceptualization, referred to as 'ecoplex,' represents a significant improvement over previous frameworks in that it is more complete and capable of rigorous testing.

Ecoplex goes well beyond the 'triple bottom line' (improvement of natural, economic, and social capital) that has characterized previous sustainability studies. It adds other forms of capital such as human, social, cultural, political, cultivated, and fabricated.

Ecoplex also seeks to assure that the resource systems upon which humans rely to improve their quality of life are capable of providing resources over the long term. The framework adopts the principle of 'sensible' sustainability, which argues that sustainable outcomes are achieved only when both human and natural systems are healthy.

The framework will be tested on a suitable island ecosystem. The project will include six major steps:

- (1) develop a coherent conceptual framework (ecoplex) that relates quality of life to various forms of resource capital;
- (2) measure island stakeholders' satisfaction with their quality of life;
- (3) assess the relative value of each form of resource capital to quality of life among the island's stakeholders;
- (4) evaluate the health of the island's resource systems using productivity/maintenance ratios;
- (5) engage stakeholders and policymakers in informed and deliberative policy dialogues concerning ways to improve quality of life through framing policy analyses and evaluating feasible sustainable development policy alternatives; and
- (6) determine whether the preferred alternative will both improve stakeholders' quality of life and improve resource systems' health.

## **A Comparison of Ideologies of Different Sexual Orientations on Physical Attractiveness in Romantic Relationships**

**Tracy Rose and Rozilyn Miller**

**McNair Scholar from the University of Central Oklahoma**

**Presentation Subject Area: Social Sciences**

The purpose of this study was to survey different sexual orientations to determine if they share the same ideology of physical attraction in romantic relationships. This study utilized a non-random convenience sample of 44 undergraduate students at a midsized university in the Midwest within the Department of Mass Communication. The researcher used a modified 14 question survey based off the Interaction Appearance Theory developed by Kelly Fudge Albada, Mark L. Knapp, and Katheryn E. Theune. The first five questions were general demographic questions. The next four questions determined relationship status. The final five questions allowed the researcher to study the participant's ideology in connection with physical attractiveness by rating satisfaction in relationships. This research attempted to incorporate diversity using heterosexuals, gay men, lesbians, and bisexuals in communication research

## **Rate of Carbon Dioxide Uptake in Pure Water**

**Jayaprakash Samyvelu and Gary Foutch**

**Department of Chemical Engineering**

**Oklahoma State University**

**Presentation Subject Area: Education**

Abstract not submitted.

## **Environmental Factors Influencing the Growth and Sporulation of *Stachybotrys atra***

**Sabrina Scroggins, Charles Biles, Ph.D., Terry Cluck, Ph.D., and Tony Lee**

**McNair Scholars Program from East Central University**

**Presentation Subject Area: Biological Sciences**

The fungus, *Stachybotrys atra*, is often found in water damaged buildings and has been associated with Sick Building Syndrome. Experiments were conducted to determine environmental factors that influence the growth and sporulation of *S. atra*. *S. atra* was isolated from a ceiling tile in the Physical and Environmental Science Building at East Central University. The fungus was grown on potato dextrose agar (PDA) for at least 7 days before being used in various tests. Growth of *S. atra* on corn meal agar had the greatest growth diameter when compared to growth on potato dextrose, tile, *carboxymethyl cellulose*, sabourand's, malt extract, and water agars. The fungus grew the same in both the light and dark environments. When concentrations of PDA were compared, the best growth occurred at 39 g/L. *S. atra* grew best at 30 degrees C and did not grow at 5 and 37 degrees C. When the 5 degrees C and 37 degrees C were placed at room temperature, the 37 degrees C exposed plates did not resume growth. Tile agar and PDA supplemented with KClO<sub>4</sub> showed inhibition of growth at 15 g/L and 10 g/L, respectively. CMA and Tile agar supplemented with Borate showed inhibition of *S. atra* growth diameters at 15 g/L and 10 g/L, respectively. Further experiments are being conducted to determine the effects of environmental factors on sporulation.

## **Job Satisfaction of Employee Working in the Restaurants**

**Arisara Seyanont and Wanlanai Saiprasert**

**Department of Hotel and Restaurant Administration**

**Oklahoma State University**

**Presentation Subject Area: Social Sciences**

The restaurant industry employs an estimated 12.2 million people, making the nation's largest employer outside of government. The restaurant industry provides work for more than nine percent of those employed in the United States ([www.restaurant.org](http://www.restaurant.org)). Within the field of hospitality, occurrence of high employee turnover continues to be a focus of research (Cranny, 1992; Kovach, 1977; Rose, 1991). Due to the high cost of training new employees, the cost of turnover in the food and beverage industry remains high. The purpose of the study is to investigate the job satisfaction of employees working at restaurant. Specific goals are to identify the attribute affecting job satisfaction and measure the satisfaction level of employees working at restaurant. The population of the study was the employees who have been working at restaurant for at least three months. The data was collected from the population, there were 150 employees working at the restaurant and 135 employees were responded. Descriptive statistics of frequency and mean were used to describe the profile of the respondents and describe the extent of job satisfaction level. The results were 58 percent of employees were male and 42 percent were female. The majority of employees were 20 to 30 years old (65.70 percent). The majorities of employees was server (37.30 percent) and cook (25.50 percent). Factor analysis was used to identify the constructs underlying the job satisfaction. A principal components analysis with a varimax rotation was used with a pre-determined cut off eigenvalue greater or equal to 1.0. Only factors with more than 0.5 loading were retained and included in the factor identification. The study identified employee job satisfaction factors which can be grouped into seven factors namely "Benefit", "Effective Supervision", "Training", "Relationship", "Working Environment", "Customer and Recognition", and "Communication". A cluster analysis was performed on the satisfaction factors. A hierarchical method was used to determine the best number of clusters. Cluster analysis suggested that a five-cluster was most appropriate for the data of employee satisfaction factors. There were five dimensions of employee who were "Relationship Oriented Employee", "Independent Employee", "Organization Concerned Employee", "Customer Oriented Employee", and "Career Advancement Employee". The results from the study revealed

that employees at restaurants satisfied in dimension of benefit, effective manager, training, relationship, work environment, recognition and communication. The study revealed that employees focus on a different satisfaction dimensions, therefore the segment of employee should be considered to response to their need and characteristics.

## **Cooperative Competency, Strategic Alliance, and New Product Development Success**

**Prashant Srivastava**  
**Department of Marketing**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

New products provide increased sales, profits, and competitive advantage for most organizations. Unfortunately, nearly fifty percent of new products introduced every year in the market fail, causing considerable financial loss to companies introducing them (Zirger and Maidique 1990). This has forced organizations to form alliances to reduce the inherent risks associated with new product development (NPD) and to manage the innovation process and outcome better. This paper integrates literature from new product development and strategic alliances and two propositions are developed. New product development is the key to maintaining and gaining competitive advantage. But, new product development requires a lot of resources and is risky. Strategic alliances are an important means to gain access to resources and share the risk involved. This becomes even more important in highly turbulent environment. New product development alliances can create effective win-win situations for everyone involved. Environmental turbulence as defined by Milliken (1987) is the perceived inability of an organization's key managers to accurately assess the external environment of the organization or the future changes that might occur in that environment. It has two prominent dimensions, market turbulence and technological turbulence. The paper explores the relationship between cooperative competency (trust, communication, cooperation) and NPD success, and explores the effect of environmental turbulence on this relationship. More specifically, it proposes that in high environmental turbulence condition, greater cooperative competency is required to achieve successful new product development.

## **Effects of Different Winter Growing Programs and Subsequent Finishing on Gene Expression in Different Adipose Tissue Depots in Beef Steers**

**Dan Stein, A. Pillai<sup>1</sup>, M. P. McCurdy<sup>1</sup>, U. DeSilva<sup>1</sup>, C. R. Krehbiel<sup>1</sup>, R. D. Geisert<sup>1</sup>, J. B. Morgan<sup>1</sup>, J. R. Malayer<sup>2</sup>, and G. W. Horn<sup>1</sup>**  
**Department of Animal Science**  
**Oklahoma State University**  
**Presentation Subject Area: Whiteman Award Presentation**

Components of most grid pricing structures in the marketing of fed cattle are Quality Grade and Yield Grade. Quality Grade, determined primarily by the amount of intramuscular adipose tissue (marbling), is a major determinant of carcass value and palatability. A moderate to strong genetic antagonism exists between carcass fatness traits and carcass yield percentage. Included in the NBQA top ten concerns facing the U.S. fed-beef industry were inadequate tenderness, insufficient marbling, and excess external fat cover. The majority of the "waste" and "taste" inefficiencies is due to either excess or insufficient lipid deposition

and calculates to over a 2 billion dollar loss to the beef industry. This does not consider inefficiencies of production incurred by over-fattening cattle to improve palatability and acceptability. Understanding the mechanisms regulating the metabolic pathways that orchestrate lipid deposition within and between depots could be integrated into management practices and ultimately enhance beef consumption, increase production efficiency, and increase profitability. The objective of this study was to determine gene expression profiles between subcutaneous and intramuscular depots in beef steers fed on different winter growing programs. A total of 260 steers, 65 steers from OSU (weaned at 220 d) and 195 steers of similar breed, type, and age from Continental Beef Research, were utilized for this project. Steers were blocked by weight and randomly assigned to an initial harvest group (n=4) or one of four treatment groups (n=8 pens, 8 hd/pen); steers placed in the feed lot immediately after weaning and fed a high concentrate ad libitum diet (CF); steers grazed on wheat pasture with unrestricted forage availability (WP); steers fed a corn silage-based growing diet (CSF); or steers program fed a high concentrate diet (PF). Steers in the CSF and PF groups were fed to gain BW at a similar rate as WP steers. At the end of the growing phase, determined by the WP group (112 days), steers from WP, CSF, and PF groups were placed in the feedlot and adapted to a high-concentrate diet. At the initiation of the feedlot phase, six steers from the WP, CSF, and PF treatment groups were randomly selected for harvest. Steers from all treatment groups were harvested at a common backfat (1.27 cm) as determined by ultrasound. At harvest, a 7.6 x 7.6 x 7.6 cm<sup>3</sup> section was dissected from the longissimus dorsi (ribeye) muscle between the 12th and 13th rib, subcutaneous and intramuscular adipose tissue was collected and frozen at -80o C. Total RNA was extracted for microarray analysis of a 1,500 gene cDNA non-redundant clone library constructed from subcutaneous and kidney-pelvic-heart adipose tissue. Microarray hybridizations were performed to identify differential gene expression between subcutaneous and intramuscular adipose tissue between different growing programs. Hybridizations (3 animals/trtmt, 3 reps/trtmt) were performed using the 3DNA Array 900 MPX labeling kit from Genisphere Inc. Following hybridization, scanning and raw microarray data acquisition through GenePix4000, data for each deposition was normalized using pin-by-pin intensity dependant normalization, processed and analyzed using GenePix Auto Processor 2.0 (GPAP 2.0).

1 Department of Animal Science, Oklahoma Agricultural Experiment Station, and  
2 Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University, Stillwater 74078

## **Murugan Worship and Cultural Identity among Tamil Hindus**

**Aswin Subanthore**

**Department of Geography**

**Oklahoma State University**

**Presentation Subject Area: Social Sciences**

Hindu religiosity has several cultural dimensions, especially with its polytheistic structure and complex tradition-bound practices. Tamil Hinduism in particular, has diffused into several parts of the world, originating from southern India and is characterized by its strong religious and cultural sentiments together with elaborate rituals with family-oriented events in spiritual milieu. Specifically, the realm of Tamil Hinduism is symbolized by the worship of Murugan, a key Hindu deity in southern India. While religious scholars have studied Murugan worship around the world, this paper uses cultural geography as a methodology in looking at the cultural origin, diffusion and changes that Tamil Hindus have expressed as an ethnic group in their affiliation to Murugan worship and also as a form of cultural identification in new regions of their migration. Murugan worship has been one of the key foundational elements in Tamil cultural history with elaborate temples and patronization of arts, literature and poetry directed towards Murugan worship by early Tamil kingdoms. Today, in rural Tamil communities, Murugan temples and their

templescapes are unique places of gathering and to celebrate key Tamil Hindu festivals. In this exploratory study, Tamil Hindu religiosity is investigated within the five themes of geography, viz., cultural origins, cultural diffusion, cultural ecology, cultural interaction and cultural landscapes in looking at the spiritual perceptions of Murugan as seen in key Tamil regions, thereby illustrating the ethnic identification process among Tamil Hindus around the world. Examples are drawn from regions around the world, especially South Africa, Malaysia, Sri Lanka and India with their own unique cultural history and religious affiliation to Murugan worship.

## **The Directed Growth of Single Crystal Indium Wires**

**Ishan Talukdar, Birol Ozturk, T. D. Mishima, and Bret N. Flanders**  
**Department of Physics**  
**Oklahoma State University**  
**Presentation Subject Area: Physical Sciences & Technology**

We demonstrate the dielectrophoretically guided growth of sub-micron indium wires between targeted points on lithographic electrodes that are immersed in aqueous solutions of indium acetate. Electron diffraction measurements reveal that these wires are single crystals of pure indium with a  $\langle 110 \rangle$  growth axis. Tuning the concentration of the salt solution and the voltage parameters (amplitude and frequency) enables the fabrication of individual, single crystal wires of arbitrary length and diameter. These dependencies shed light on the growth mechanism of these wires and they provide a means of controlling the wire-properties that will facilitate the development of innovative technological applications.

## **Sports Participation and Juvenile Delinquency**

**Amy Tate and Dr.Hu**  
**McNair Scholars Program from CMSU**  
**Presentation Subject Area: Social Sciences**

Sports is a favorite pastime in the American culture; more than 25 million youths participate in sports each year in the United States (Brown & Francis, 1993). In general, the public tends to believe that sports participation is an effective deterrent in preventing delinquency. Unfortunately, due to increasing pressure on coaches and players to win, the behaviors of young athletes may not always reflect the positive values expected. These behaviors are often associated with violence, physical aggression, and delinquency (Bredemeir, 1994).

This study examined the role of sports participation in juvenile delinquency. Because of a limited number of studies on this topic and discrepancies in the findings, it becomes necessary to continue this line of research. Based on information gathered from a self-reported survey conducted among 36 students from one regional high school in Missouri, the results failed to support the research hypothesis that the higher the level of sports participation, the lower the involvement in delinquent behavior. Even though statistically significant difference was found in the non-status personal offense of bullying, the data indicated that it was committed more among the regular sports participants than among the active sports participants. The results also revealed that those who participated in both physical and non-physical sports were more likely to show delinquent involvement than the other groups who participated in either the physical or non-physical sports alone. Since measurement has always been an inherent problem in this kind of research, more research is needed in the future.

## **Production of Recombinant Sheep Prion Protein (Recshprp) and Its Detection In Muscle Foods Using Western Blotting and Immuno- Pcr**

**Stanley Thomas, Samodha Fernando, Udaya DeSilva, and Christina Mireles DeWitt**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

Prions are unconventional pathogens which are proteinaceous in nature lacking nucleic acid and are the causative agents for a set of neurodegenerative diseases commonly known as Transmissible Spongiform *Encephalopathies* (TSE) seen in many mammalian species including Creutzfeldt-Jakob disease (CJD) in humans and *bovine spongiform encephalopathy* (BSE) in cattle.<sup>1,2</sup> These infectious proteins are resistant to high temperatures, proteases and many of the other conventional methods of sterilization<sup>2</sup>. In this experiment, our objectives were to over-express the sheep prion protein using a bacterial vector and determine the various detection levels of recombinant sheep prion protein (recShPrP) fused with a C-terminal 6XHis-tagged fusion protein in meat products using the Western Blotting technique. The ovine PrP gene from genomic DNA was PCR amplified and only the functional prion poly peptide (PrP 25-232) was sub-cloned into pET102/D-TOPO plasmid (Invitrogen) after removing the sequences corresponding to the signal peptides from both N-terminal and C-terminal ends. The integrity of the cloned PCR product as well as the His-tagged fusion protein and its orientation within the vector was determined by DNA sequencing and upon confirmation was induced with IPTG for protein expression. The expressed proteins were solubilised by addition of 8 M guanidinium chloride in lysis buffer and purified using adsorption to a Ni-NTA metal affinity resin (*Invitrogen*). Purified proteins were mixed with homogenized raw meat in various concentrations and were detected by Western Blotting as low as 10ug. Immuno ‘ PCR is a recently described method for ultra-sensitive antigen assay, which was able to detect the recShPrP in raw meat as low as 200fg/ml. No signals were obtained from negative control in both Western Blotting and Immuno-PCR. Production of rec-PrP protein by this method could be used in the study of acid-solubilized fractionation of muscle proteins which separates myofibrillar and sarcoplasmic proteins in meat which might enhance the safety of meat products that would eventually be rendered and used for non-mammalian animal feed or fertilizer.

## **Mechanistic Investigations of Paraffin Activation and Reaction on Zeolitic Catalysts**

**Matthew Truitt, Stan S. Toporek, Rosimar Rovira-Truitt, and Jeffery L. White**

**Department of Chemistry**

**North Carolina State University**

**Presentation Subject Area: Physical Sciences & Technology**

Alkylates are branched hydrocarbons used in motor fuels to provide octane enhancements. Unfortunately current production methods require the use of environmentally dangerous materials and produce large quantities of hazardous wastes. Zeolites provide a much safer potential for alkylate synthesis, but have not been adopted for use because of a lack of mechanistic information concerning how alkylates form in zeolites. Using a combination of variable-temperature solid-state NMR experiments which provide in-situ mechanistic information, and gas-phase pulsed microreactor experiments which provide information about the reaction selectivity and activity this problem has been investigated. Experiments from this work have shown: (1) H/D exchange occurs between perdeuterated isobutane and H-ZSM-5 in the absence of olefins in adsorbed gas; (2) isobutane forms an adsorption complex with the catalyst selectively at the active Bronsted acid site; (3) there is insufficient residual carbon in the catalyst to initiate/mediate H/D exchange and it is unlikely such a species' presence would initiate/mediate exchange; (4) the reactor data indicates structural isomerizations, cracking, alkylation, etc. do not occur for isobutane in H-ZSM-5 for the

temperatures H/D exchange was monitored by the NMR work; and (5) both the primary acid site and methyl peaks kinetic data are in agreement, all of which give evidence of a direct protonation step for H/D exchange.

## **Differential Analysis of Gene Expression During Adipogenesis in Cattle**

**Asitha Vasudevan Pillai, Xiaoping Guo, Clinton R. Krehbiel, Patricia Ayoubi and Udaya DeSilva<sup>1</sup>**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Whiteman Award Presentation**

Genetic regulation of adipogenesis is of considerable interest in both animal agriculture and in humans. As part of a larger project on understanding the differential regulation of adipogenesis in cattle, we have constructed an adipose tissue specific cDNA library and have sequence analyzed ~4000 individual clones. A non-redundant subset of 1050 clones was used to generate an adipose tissue specific cDNA microarray. Using this microarray, we studied differential gene expression profiles in a primary cell culture system derived from bovine subcutaneous adipose tissue. RNA was collected from the cell cultures at different time points (0, 6, 12, 24, 48, 72, 120h) post induction and expression profiles were analyzed using the microarray. Results of the microarray analysis show that approximately 100 genes are differentially expressed during the differentiation process. Microarray data were validated using two transcripts with significant fluctuations in expression and qRT-PCR.

## **Detection of Emerging Organic Contaminants Using Surface Plasmon Resonance Spectroscopy**

**David Westover**

**Department of Chemistry**

**Oklahoma State University**

**Presentation Subject Area: Physical Sciences & Technology**

Lightly crosslinked theophylline imprinted poly N-(N-propyl)acrylamide particles were spin coated onto a gold surface and dried. Once dehydrated, the nanospheres responded selectively to the targeted analyte. Chemical sensing is based on changes in the refractive index of the imprinted particles that accompanied swelling due to binding of the targeted analyte to the polymer. SPR was used to monitor the swelling of the polymer particles as a function of the change in the refractive index. In the presence of aqueous theophylline at concentrations as low as  $10^{-6}$  M, particle swelling was readily detectable. Swelling was also reversible, selective for theophylline over other similar molecules and was independent of ionic strength.

## **Single Nucleotide Polymorphism-based Segregation Analysis of Genetic Control of Adipogenesis in Swine**

**Yapa M.A.S. Wickramasinghe<sup>1</sup>, Xiaoping Guo<sup>1</sup>, Bruce A. Roe<sup>2</sup>, Catherine W. Ernst<sup>3</sup>, and Udaya DeSilva<sup>1</sup>**

**Department of Animal Science**

**Oklahoma State University**

**Presentation Subject Area: Biological Sciences**

Enhancement of production efficiency and quality are important factors in the pork industry. Other than the environmental factors genetics play a major role in carcass and meat traits in pigs. Conventional selective breeding programs on easily measured phenotypic characteristics have improved the lean growth rate but decreased the quality of meat. High-thorough genotype scanning for quantitative trait loci is important in exploitation of genotypic diversity between different breeds in selective breeding programs to improve the meat quality and for this process it is important to develop molecular markers such as Single Nucleotide Polymorphisms that are abundant, stable and identical by descent.

Main objective of this research is the identification of Single Nucleotide Polymorphisms in expressed porcine genes that are responsible for fat deposition and pork quality.

A Duroc X Pietran F0 resource population was developed at Michigan State University. 142 animals were born in the F2 population and they were slaughtered at 23-26 week of age. Sub-cutaneous adipose tissue was collected from 142 F2 animals and RNA was extracted from nine extreme outliers for back fat thickness from the F2 population and was used to construct an adipose tissue cDNA library. 15,000 clones from this library was sequence analyzed. All sequences were clustered and 13 958 trace files were analysed for Single Nucleotide Polymorphisms (SNP). 409 SNPs were identified within the cDNA library. These polymorphisms consisted of 292 transitions and 117 transversions. 50 SNPs in the translated regions of the transcript were selected for expression and segregation analysis and for mapping on the porcine genome.

1Oklahoma State University Department of Animal Science Stillwater, OK 74078 USA., 2Oklahoma State University Department of Biochemistry and Molecular Biology Stillwater, OK 74048 USA., 3Michigan State University, Department of Animal Science, East Lansing, MI 48824

## **Single Nucleotide Polymorphism-based Segregation Analysis of Genetic Control of Adipogenesis in Swine**

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## **Virtual Reality: Education's Progressive Technology**

**Scott Williams**  
**Department of Occupational Education**  
**Oklahoma State University**  
**Presentation Subject Area: Education**

Conceptual forms of virtual reality have existed since the 1920's. Initial versions were makeshift attempts to create contextual reality within various training situations.

VR began to increase in popularity around the 1970's and 80's. As technological advancements progressed, the ability to create a more realistic environment became the driving force behind the new medium.

Abundant in its composition, the various forms of virtual reality can be seen as a collection of innovative ideas and extensions on the general premise or purpose of allowing an individual abilities of realistic experiences to which learning can derive. These forms offer varying levels of immersion and require several devices and or software programs. Fully immersive virtual reality often consists of a visual rendering device, orientation tracking mechanism, an input device, sound, and sometimes sensory feedback. While financial constraints of the current educational system hinder the adoption of fully immersive virtual reality, the more cost effective desktop format provides a platform for scores of learning applications. Its adoption and resultant contextual teaching opportunities may be the next wave of technology driven instructional design.

## **Chewing Gum: Stress Induced or Stress Reducing?**

**Victor Wong, Frank Collins, and Brian Miller**  
**Department of Psychology**  
**Oklahoma State University**  
**Presentation Subject Area: Social Sciences**

The present study investigated the stress relieving properties of confectionary chewing gum in the presence of cold pressor stress. The relationship between chewing rates and self-reported stress levels were also investigated. 27 male and 36 female non-smokers who reported regular chewing gum use were studied. Each

participant put their hand in either ice water (2 degrees Celsius) or room temperature water for 3 minutes. Self reported stress levels were assessed four times during each experimental session. Time one was administer prior to the cold pressor task. Time two followed immediately after the completion of the cold pressor task. Assessment times three and four followed ten minute recovery time delays. Findings demonstrated that chewing gum did not have a significant stress reducing effect during the cold pressor task or recovery. Further, chewing rates were not found to be associated with participant's stress levels.

## **Sustainable Characteristics of Earthbag Housing**

**Brooke Woods and Dr. Mihyun Kang**  
**Department of Design, Housing, and Merchandising**  
**Oklahoma State University**  
**Presentation Subject Area: Humanities**

**Purpose:** The purpose of this study was to promote awareness of the earthbag building system, while calling attention to its sustainable properties. Earth filled bags have long been used for military and disaster relief applications, serving as bunkers and flood control respectively. Architects such as Frei Otto and Gernot Minke experimented with earthbags for architectural purposes. With advancements pioneered by architect Nadar Khalili, the earthbag building system allows for the construction of affordable, sustainable housing through the use of locally available materials, and inexpensive construction, maintenance, and use. However, the earthbag system is not widely known and its sustainable characteristics have therefore gone unrecognized throughout the home building industry.

**Process:** A case study was conducted for this study. A private earthbag residence located in Crestone, Colorado was selected based upon the homeowner's experience and expertise in the earthbag building system. Interviews were conducted to acquire insight into the construction methods and materials used for the earthbag building system. Sustainability was accessed using criteria set forth by the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) home program. The program promotes transforming traditional home building practices into those which are more sustainable. This is achieved through compliance with home building guidelines related to home location, site sustainability, water efficiency, indoor environmental air quality, materials and resources, energy and atmosphere, homeowner awareness, and innovation and design process.

**Conclusion:** By studying an existing earthbag residence in conjunction with USGBC LEED for homes program, it was possible to promote awareness of the sustainable properties of the earthbag building system. This knowledge has implications throughout the housing industry, allowing for the construction of affordable, sustainable homes.

## **The Design of Sustainable Relief Housing in Ethiopia**

**Brooke Woods**  
**Department of Design, Housing, and Merchandising**  
**Oklahoma State University**  
**Presentation Subject Area: Humanities**

The purpose of this work is to address the need for sustainability in the nation of Ethiopia through the development of a relief housing prototype. The project addresses the issue of urbanization throughout

Ethiopia which, as in many developing countries, results in urban poverty and homelessness. The relief housing prototype will shelter Ethiopian citizens until they are able to return to their traditional ways of life. As it is necessary to look beyond conventional construction methods and materials when designing sustainable housing for the nation of Ethiopia, the project utilizes the earthbag building technique pioneered by architect Nadar Khalili. This technique, when innovatively combined with the Cradle to Cradle design model developed by McDonough and Braungart, results in a relief housing prototype that considers environmental, economic, and social issues in Ethiopia, in order to benefit not only the people, but also their prosperity and the planet in a sustainable way. With locally available materials, inexpensive construction, maintenance, and use, this design provides affordable shelter for the Ethiopian people. All construction and interior design materials occur naturally, and will return to nature after use, ensuring the most effective use of material resources, preventing toxin deposition in the soil, and providing superior indoor air quality to residents. By minimizing the amount of wood used in construction, the earthbag technique prevents deforestation and the resulting desertification in Ethiopia. Ethiopian culture serves as the cornerstone of the design in order to aid in acceptance by the Ethiopian people. Finally, due to its adaptive properties and use of locally available materials, the project carries implications for further development and use throughout the world.

## **Environmental and Potassium Chlorate Effects on the Growth and Perithecial Production of *Chaetomium Globosum*, a Common indoor Mold**

**Desiree Wright and Charles Biles**

**McNair Scholars Program from East Central University**

**Presentation Subject Area: Biological Sciences**

Mold has been blamed for causing human health problems at work and home. One fungus often found in indoor environments is *Chaetomium globosum*. This fungus produces sexual reproductive structures called perithecia that can be easily visualized on a media plate. Malt extract agar was found to be the best media for determining hyphae growth and perithecia production, however, the fungus grew well on filter paper, gypsum board, ceiling tile agar, carboxyl-methyl cellulose (CMC) agar, and potato dextrose agar. Over abundant growth of the fungus was observed on potato dextrose agar (PDA), in which individual perithecia were indistinguishable. No perithecia grew on CMC during the two weeks that the experiments were conducted. Potassium chlorate is known to mutate the nitrogen synthesis in many fungi. Experiments were conducted to determine at what concentration of  $KClO_3$  hyphae growth and perithecia production were inhibited. Hyphae growth was inhibited between 5 and 10 g/L of  $KClO_3$  in MEA. The hyphae width was not affected by the  $KClO_3$  levels. Perithecia formation was inhibited in  $KClO_3$  levels as low as 0.1 g/L. Enhanced pigmentation was observed when the fungus was grown at 30 C when compared to 25 C. Certain media also stimulated a pink/red pigment. Light did not have an affect on the formation of perithecia. Further studies need to be conducted to see in  $KClO_3$  will inhibit growth of fungi on building materials. Currently, Wet-Scanning Electron Microscopy (Wet-SEM) is being used to further distinguish the effects of potassium chlorate on hyphal growth.

## **Spread-Spectral-Encoding for Video-Rate Near-Infrared Optical tomography**

**Hao Xie , Daqing Piao, Weili Zhang, School of Electrical and Computer Engineering, Oklahoma State University; Brian W. Pogue, Thayer School of Engineering, Dartmouth College**

**Department of Electrical and Computer Engineering  
Oklahoma State University**

**Presentation Subject Area: Physical Sciences & Technology**

Near-infrared (NIR) measurements of attenuation through tissue have high contrast between blood and parenchymal tissue. The high optical signal contrast means that in principle the measurements can be rapid and fast temporal changes in contrast can be imaged. However, the diffuse pattern of photon transportation in tissue demands that signals for each source-detector pair be encoded properly to facilitate localized measurement. Source-detector encoding can be implemented by mechanical switching, in which the speed is ultimately limited, or by frequency multiplexing to allow simultaneous excitation of source signals, which however is subject to linear reduction of detection dynamic range when each source is added. Recently, source spectral-encoding has been demonstrated for simultaneous sampling of completely decoded source-detector signals that renders video-rate imaging. Spectral-encoding utilizes slight wavelength variation between emissions from laser diodes and uses a spectrometer to separate source signals before detection by CCD. This technique, however, requires the wavelength and intensity of multiple individual sources be stabilized. In this paper, we introduce an alternative of this spectral-encoding technique, namely spread-spectral-encoding, that employs single broadband source. This approach avoids the complexity of stabilizing multiple sources, and has the potential of implementing video-rate imaging to endoscopic scale. In this approach, the output from a broadband source is dispersed by a grating and coupled to a linear fiber bundle, where each fiber delivers light with slightly different wavelength to the imaging array, providing spread-spectral encoding of the source for simultaneous sampling for all source-detector pairs.

We have used a mode-locked femtosecond Ti: sapphire laser as the source. The light source is centered at 805nm with 40nm FWHM bandwidth. The laser emission is coupled to a 200mm fiber, and incident upon a 1200 groove/mm diffraction grating. The dispersed light is then collimated by an achromatic lens of 200mm focal length to couple to a linear fiber bundle consisting of eight 600mm bare fibers. The light transmitted by each individual fiber has wavelength slightly offset from the neighboring ones and the overall bandwidth is 12nm, providing near-uniform attenuation in tissue. Eight detector fibers are interspersed evenly with respect to the source fibers, and the collected light is delivered to the spectrometer where the detector fibers are bundled linearly to match the vertical entrance slit of the spectrometer. Sampling speed of 24 frames per second has been achieved for an absorbing object that is immersed and moved circularly in 1% Intralipid solution held by the imaging array of 27mm in diameter.

## **Numerical Simulations of a Ballistic Spin Interferometer with the Rashba Spin orbital Interaction**

**Zhenyue Zhu, Qing-Feng Sun, Bin Chen, and Xincheng Xie**

**Department of Physics**

**Oklahoma State University**

**Presentation Subject Area: Physical Sciences & Technology**

We numerically investigate the transport behavior of a quasi one-dimension (1D) square loop device containing the Rashba spin-orbital interaction in the presence of a magnetic flux. The conductance versus the magnetic field shows the Altshuler-Aronov-Spivak (AAS) and Aharonov-Bohm (AB) oscillations. We focus on the oscillatory amplitudes, and find that both of them are strongly dependent on the spin precession

angle (i.e. the strength of the spin-orbit interaction) and exhibit non-periodic oscillations, which are well in agreement with the recent experiment by Koga et.al. However, our theoretical results for the ideal 1D square loop device for the node positions of the amplitudes of the AB and AAS oscillations are found to be of large discrepancies comparing with experimental ones.