



Paper Abstracts

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Pregnancy Associated Plasma Protein-A (Papp-A) Gene Expression In Granulosa And Theca Cells: Differential Effects Of IGF-1 And -2

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Presentation Subject Area: Whiteman Award Presentation

PAPP-A is a metalloprotease capable of cleaving IGFBP-2, -4 and -5, therefore making IGF-1 and -2 available for follicular growth and differentiation. The objective of this study was to determine the effect of IGF-1 and -2 on PAPP-A mRNA levels in small and large granulosa and theca cells. Small (Sm) follicle (1-5 mm) granulosa cells (GC) and large (Lg) follicle (> 8 mm) GC and theca cells (TC) were collected and cultured in medium containing 10% FCS for 48 h, after which cells were cultured in serum free-medium containing 0 or 100 ng/ml of either IGF-1 or IGF-2 for SmGC in experiment 1; 3 and 100 ng/mL of IGF-1, 100 ng/mL of IGF-2, 30 ng/mL of FSH or 100 ng/mL leptin for LgGC in experiment 2; and 0 or 100 ng/mL of either IGF-1 or IGF-2 for TC in experiment 3. Total RNA was extracted using the TRIzol[®] method. Expression level of PAPP-A were quantified using one-step RT-PCR with TaqMan[®] Gold RT-PCR Kit; amplifications were performed in the ABI prism[®] 7700 sequence detection system (Applied Biosystems, Foster City, CA) using 18 S rRNA control kit to normalize for RNA loading. Relative comparison was done using comparative threshold cycle (Ct) method and all values expressed as fold gene expression 2^{-Ct} (relative to the sample exhibiting the highest Ct within each experiment). Results show that IGF-1 and -2 did not affect ($P>0.10$) PAPP-A mRNA levels in SmGC and LgGC. However, in theca cells, IGF-2 treatment decreased ($P<0.05$) PAPP-A gene expression by 39% as compared with the control cultures; IGF-1 was without effect ($P>0.10$). We conclude that IGF-2 selectively decreases thecal PAPP-A mRNA levels. This may cause a reduction in PAPP-A and its proteolytic action on IGFBPs allowing for less 'free' or bioavailable IGFs in the theca layer for steroidogenesis during growth and selection of follicles.

Expression And Localization Of Antigens Protective Against Ixodes Scapularis Infestations

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Presentation Subject Area: Biological Sciences

Development of vaccines against *Ixodes scapularis* infestations is dependent on identification, expression and localization of antigens protective against tick infestations. In this research a cDNA expression library was made using a tick cell line (IDE8) that was derived originally from *I. scapularis* embryos. Protective antigens were identified when the library was screened by expression library immunization (ELI) using a tick/mouse model system. CD-1 mice were immunized twice with 50 µg of plasmid DNA and then challenge-exposed with 100 *I. scapularis* larvae. After several rounds of screening, cDNA clones were selected that resulted in development of immunity to larval tick infestation. Genes (4E6, 4D8, 4E8) encoding for protective antigens were expressed in *E. coli* and the recombinant proteins were purified. The expression of genes in different developmental stages of *I. scapularis*, and tissues from adult ticks was confirmed by RT-PCR. Immunohistochemistry (IHC) was performed on paraffin-embedded sections of *I. scapularis* in order to localize the antigenic sites in ticks. New Zealand rabbits were immunized twice with 10 µg/dose of

each recombinant protein or IDE8 cell total proteins. For the IHC studies, sera from pre-immune rabbits were used as negative controls, while sera from rabbits immunized with IDE8 total proteins were used as a positive control. Genes expressed in all the developmental tick stages, as well as in adult tissues of *I. scapularis*, were demonstrated by RT-PCR. Immunocytochemical localization of protective antigens was observed in tissues of adult ticks. These results demonstrated that 4E6, 4D8, and 4E8 protective antigens are present in all *I. scapularis* stages, thus suggesting that they may be good antigens for use in the development of a vaccine against this tick.

Tumor Necrosis Factor Stimulated Gene-6 Protein And Gene Expression In The Uterus Following Estrogen Administration On Days 9 And 10 Of Pregnancy In The Gilt

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Presentation Subject Area: Whiteman Award Presentation

In the pig, conceptuses release estrogen to establish pregnancy on day 12 of gestation, which is temporally associated with attachment of the trophoblast to the uterine surface epithelium between days 13 to 18. Administration of exogenous estrogen to pregnant gilts on days 9 and 10 of pregnancy causes lysis and fragmentation of the conceptuses between days 15 to 18 of gestation. Conceptus degeneration is associated with breakdown of the microvilli glycocalyx on the apical border of the uterine surface epithelium. Pregnancy is established through an inflammatory mediated response involving adhesion and immune factors. Cumulus cell expansion during ovulation is also mediated through an inflammatory process in which the major component of the extracellular matrix (ECM) involved with matrix expansion is hyaluronan (HA). A component in serum is required for the incorporation and stabilization of HA into the expanding matrix. Serum provides components of the inter-alpha-trypsin-inhibitor family (ITI). ITI and HA will not form a complex alone but require an additional factor, tumor necrosis factor stimulated gene-6 (TSG-6), serving as a vital cross-linker for ECM formation. TSG-6 expression is stimulated by TNF- α , IL-1 β , and prostaglandin E (PGE). Cyclooxygenase 2 (COX-2) deficient mice are incapable of cumulus expansion suggesting TSG-6 is regulated by PGE synthesis. Uterine ITI and PGE are present during implantation in the pig. Therefore, we hypothesize that early administration of estrogen disrupts the normal expression of PGE, ITI and TSG-6 needed for stabilization of uterine glycocalyx during the period of implantation. To test the hypothesis, mated gilts (4gilts/trt/day) were treated with either 5 mg estradiol cypionate (EC) or corn oil (CO) on days 9 and 10 of gestation. Conceptuses were flushed from the uterine horns with 20 mL Hank's Balanced Salt solution following surgical removal of the uterine horn on either days: 10, 12, 13, 15, 17 of gestation. Endometrium and conceptus tissue was snap frozen in liquid nitrogen. Total RNA was extracted from tissue using TRIzol[®] (Invitrogen). TSG-6, ITI, and COX-2 gene expression was quantified by RT-PCR utilizing a fluorescence reporter and a 5' exonuclease assay system. Western blot analysis was utilized to detect TSG-6 protein in uterine flushings using a rat monoclonal antibody to human TSG-6. Total PGE content was determined in uterine flushings by immunoassay. TSG-6 protein was detected in the uterine flushings. Early estrogen treatment altered ITI, TSG-6, and COX-2 gene expression and content of PGE in uterine flushing. The present study indicates that all components needed for ECM are present in the pig uterus. Alteration of gene expression following early estrogen administration may disrupt the normal synchrony needed for conceptus attachment to the uterine surface resulting in embryonic death.

When The Muses Slew Mars: The Impact Of The First World War On British And French Literature

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Presentation Subject Area: Humanities

Literature and history often share the task of relating events to those who never experienced them to impart wisdom and progress to the future. Unlike dispassionate facts and figures, literature better conveys the mood of the past and provides sources to historians who wish to understand the feelings past events aroused in writers, poets, and those influenced by their works. Although often subjective, literature can reveal many interesting facts including the changing mores and philosophies of society.

The First World War is one such event on which both history and literature focus. Many writers and historians trace the emergence of strong anti-war sentiment and the philosophy of modernism to the war. Four of the major war memoirs from France and Britain *Under Fire* by Henri Barbusse, *Journey to the End of the Night* by Louis-Ferdinand Céline, *Goodbye to All That* by Robert Graves, and *Undertones of War* by Edmund Blunden chronicle the changing ideas about war among some of its famous participants. Although often couched in rhetoric exalting suffering, the conflict of the traditional ideas in the midst of the first modern war, the impact of impersonal warfare, and the new ideas of war born out of the First World War show a progression of these authors toward an anti-war stance. The First World War was the most sweeping and bloodiest war the world had seen. Death on such an enormous scale and the emergence of mass society in large-scale armies reduced the traditional philosophy of individualism and promoted modernism. The death of millions permanently altered the way people viewed the world and thought about war. The First World War left many lasting themes including an enduring anti-war sentiment.

The Environmental Benefits Of Conservation Reserve Program (Crp) In Texas County, Oklahoma

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Presentation Subject Area: Environmental Sciences

USDA's Conservation Reserve Program (CRP) has been criticized for administrative shortcomings and failure to achieve ancillary environmental objectives. The main goal of this research is to evaluate the long-term environmental benefits of CRP. The GIS-integrated hydrologic model AV-SWAT (Arc View/Soil and Water Assessment Tool) was used to evaluate the potential environmental benefits of the CRP in Texas County, Oklahoma. In this study SWAT model was used to simulate sediment and nutrients loadings on Beaver River watershed. The GIS interface is ideally suited for input data management and output visualization purposes. The Beaver River Watershed was subdivided into 53 sub-basins using the DEM as the base data source. Performance of model was evaluated using statistical criteria and found to explain well the variability in the observed stream flow data. Monthly predicted values generally matched well the observed values; the coefficient of determination 0.65, 0.61 and Nash-Sutcliffe efficiency 0.60, 0.55, which were similar to values found in the literature. Although the sediment yield was low, it correlates well with the CRP area. The higher the CRP area the lower the sediment yield with 30% overall reduction in sediment yield. Sediment yield was highest from wheat, general agriculture and cornfields with an average

of 9.25, 2.40, and 0.25 tons/ha/year respectively. Cell-based mapping of sediment yield, derived from the hydrologic response units, determined priority areas for future CRP enrollment. Analysis of the landscape structure showed that CRP has developed a better wildlife habitat; the CRP increased the mean patch size and number of patches. Statistically, there is an inverse correlation between sediment yield and mean patch size, patch edge and mean shape index.

"Is This Working?" An Instructor's Self Reflection Of Pedagogical Outcomes Of Her Students

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Presentation Subject Area: Education

This study will determine the extent to which the activities and discussions that took place in my Fall 2002 Young Adult Literature course not only fulfill the National Council of Teachers of English/ NCATE 1996 guideline that higher institutions of learning create courses designed to prepare teachers to be knowledgeable about contemporary children's and young adult literature, and other appropriate literature written specifically for the age and interest levels of their students, but that these students go on to teach young adult literature during their student teaching and/ or future teaching jobs.

The results from this study will be used in improving the design of young adult literature courses in addition to identifying the obstacles that prevent English teachers from using young adult literature in their classrooms. Other studies concerning this topic will be discussed including Gary Salvner's contention that "time" plays a role in beginning teachers' reluctance to employ young adult literature in their curriculum.

The first part of this study will consider previous class discussions and activities that occurred during Fall 2002. This data should reveal the need of the students from such a class in order to prepare them better for using young adult literature with their students, should they decide to do so.

The follow-up portion of this study will include telephone interviews with my former students concerning their use/ non-use of young adult literature during their student teaching experiences and at the start of their first teaching jobs.

Whiteman Award Competition: Effects Of A Sunflower Seed Supplement On Performance And Reproduction Of Beef Cows And Their Progeny

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Presentation Subject Area: Whiteman Award Presentation

An experiment was conducted to determine the effects of supplementing whole sunflower seed during late gestation on performance of beef cows as well as feedlot performance and carcass traits of their progeny. During late gestation, 160 multiparous spring calving beef cows (mean: 588 kg; BCS 5.6; age 4-13 yr) were

fed one of three supplements for 76 d. Supplements included: 1) 0.95 kg/d of whole sunflower seed (WSUN; CP = 22%, EE = 44%, DM); 2) 0.39 kg/d of soybean meal (NCON; DM); and 3) 1.72 kg/d of a soybean hull based supplement (PCON; DM). Each supplement was formulated to provide similar amounts of CP and DIP; PCON and WSUN were also formulated to be isocaloric. During the treatment period, cows had ad libitum access to bermudagrass and prairie hay. By the end of the supplementation period, cows consuming PCON and NCON had gained more ($P < 0.05$) BW than cows consuming WSUN (33, 22, and 10 kg, respectively). From the end of the treatment period to the beginning of the breeding season, PCON supplemented cows lost more ($P < 0.01$) BW than WSUN supplemented cows (-123 kg and -111 kg). Furthermore, cow body condition scores were not significantly different among treatments at the end of the supplementation period (5.3), at the start of the breeding season (4.8) or at weaning (4.7). No differences among treatments were observed for calf birth weight (36 kg; $P = 0.40$), calf weaning weight (235 kg, $P = 0.43$), percent of cows cycling at the start of the breeding season (57%; $P = 0.29$) or pregnancy rate (89%; $P = 0.46$). However, first service conception rate was improved ($P < 0.06$) for PCON (79%) and WSUN (75%) compared to NCON (55%) treated cows. After weaning, steer calves were placed in a feedlot for an average of 188 d until harvest. No significant differences among treatments were observed for feedlot performance or carcass traits. In this experiment, no advantages or negative effects on cow or calf performance were observed with whole sunflower seed supplementation, compared to an isocaloric soybean hull based supplement.

The Walls Confronting Education: The Case Of Cyprus

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The identity of the eastern Mediterranean island of Cyprus is divided in many ways, among them the political, economic, theological and educational identities of those calling themselves either Turkish-Cypriot or Greek-Cypriot citizens. The impact of whether the island, as a whole, is admitted to the EU in May of this year, or just the southern Greek portion, will have enormous consequences with regard to future resources, especially those dedicated to the infrastructure of schooling, be it vocational, technical, public or higher education.

In the area of comparative and international education, the island of Cyprus occupies a unique place. It is a land divided between two different governments with a history of disagreement and conflict between the two. This is manifest, not only in the socioeconomic differences between the northern and southern halves of the island, but also in the educational approaches taken by different institutions with respect to relevance and resource. There is also the impact on students experience within these respective schooling systems.

Within the context of being considered a developing nation and destined to become a full member in the EU, Cyprus will have to make substantial adaptations to its existing educational practices. Paramount in the current and future mission of Cypriot (Turkish or Greek) education is making it compatible with the demands of the current labor market. While this in itself would represent a completely realizable goal, the situation is complicated by the cultural elements of Cypriot education. Addressing these issues brings with it the need for developing standards within the educational system. This is so in vocational technical education and public and private education. There is a plan of only admitting the Greek side, which is recognized by Europeans as being a sovereign nation-state. Should this occur without the Turkish Cypriot population, one entire side of the island will be relegated to an even lower standard of living than exist at present.

This paper will look at the manner in which the Greek and Turkish sides of the island have adapted and focused their schooling towards, or I should say away from, each other. The resulting educational policies make contact between the two communities a subject of contention and antagonism. This is on an island with a population of around 750,000. This has consequences that do not promote better relationships between the different ethnic communities. Part of the future evolution of the island's peoples and institutions will require that they confront this situation and resolve it at some point. At that time, a fundamental decision will have to be made. At this point in time, the policies and politics coming to bear on the schools are preventing them from executing the very function they are there to perform.

Disruptive Student Behaviors In Public Schools: Perceptions Of Oklahoma Principals

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In 2002, the Oklahoma State Legislature enacted the School Bullying Prevention Act in order to prevent bullying in public schools. The state education agency provided school administrators with information to assist them in implementing programs that would help reach compliance. Even with this information, school administrators may have experienced problems achieving the mandates of the law. As the leader of the school, the principal has the responsibility to ensure implementation of the law and other local school policies within his or her assigned buildings. This research addresses the principal's perceptions regarding the bullying problems in his or her school and the need for legislation to mandate compliance to the School Bullying Prevention Act.

Effect Of Fermentation By Lactic Acid Bacteria On The Volatile Components Found In Soymilk

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Presentation Subject Area: Whiteman Award Presentation

There have been efforts to increase the utilization of soybeans and soy products in the American diet because of their potential beneficial effects on health and nutrition. However, soymilk has a "beany" off flavor that is objectionable to the American consumer. One possible solution in overcoming this off flavor is to use lactic acid bacteria exhibiting reductase activity to ferment the product. Research has shown that growth of certain bacterial cultures in soymilk can reduce the volatile compounds responsible for the "beany" flavor.

The objective of this study was to determine if fermenting soymilk with cultures of lactic acid bacteria would reduce or eliminate the volatile components associated with the "beany" flavor.

A Hewlett Packard (HP) headspace autosampler coupled to a HP gas chromatograph equipped with a flame ionization detector was used to analyze the headspace samples of the fermented soymilk. The

concentrations of the volatile components in the fermented samples were compared to those in the unfermented soymilk.

All eight of the cultures tested completely eliminated the hexanal in the soy yogurt-like product and caused significant reduction in the levels of methanol. *Streptococcus thermophilus* OSU-2 was the only culture tested that significantly lowered the concentration of ethanol. All cultures except *Lactobacillus acidophilus* C19 and *Lactobacillus casei* E5 significantly lowered the level of acetaldehyde. Comparison of all of the cultures tested indicates that *L. acidophilus* L1 offers the best potential for producing fermented soymilk with an improved flavor profile. It completely eliminated the acetaldehyde and hexanal plus caused a significant reduction of the methanol. Although not significant, it also caused reduction in the concentration of ethanol.

Fermenting soymilk with selected strains of lactic acid bacteria offers an opportunity for the production of a fermented soy product with a more acceptable flavor in addition to potential health and nutritional benefits.

Selection Of An Aptamer To The Misfolded Prion Protein Of Chronic Wasting Disease

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Presentation Subject Area: Biomedical Sciences

Background: Chronic Wasting Disease affects deer and elk in North America. It is one of the prion diseases, a family of uniformly fatal neurodegenerative disorders that includes Bovine Spongiform Encephalopathy and its human form, variant Creutzfeldt-Jakob Disease. The underlying pathogenic mechanism involves the misfolding of a normal protein (PrP^c) to a pathogenic form that can be infectious (PrP^{sc}). PrP^c and PrP^{sc} are composed of the same linear sequence of amino acids and differ only their three-dimensional structure (folding). This presents several problems in developing methods to detect PrP^{sc}. Antibodies, the most common moieties used in detection strategies for diagnosis of disease, have been limited in detection of prion disease. PrP^{sc} is also very difficult to purify from PrP^c and is insoluble in aqueous solutions. Thus, it is highly desirable to develop novel probes that will detect the abnormal protein at very low levels and distinguish it from normal prion protein. Aptamers are nucleic acid ligands that recognize a target through stereochemical, non-covalent bonding, similar to antibodies. Aptamers are selected from very large pools of distinct synthetic oligonucleotides (usually less than one hundred bases long) via a process termed SELEX (Systematic Evolution of Ligands by Exponential enrichment). SELEX involves the cyclic exposure of a pool of nucleic acid to a target, the selection of binding species, and the amplification of these species.

Methods and Results: We will use a crossover approach to overcome the problems presented by PrP^{sc} as a target for aptamer selection whereby the pool of oligonucleotides is first driven toward recognition of PrP^{sc} by presenting peptide epitopes thought to be surface exposed in PrP^{sc} but not in PrP^c, then the pool will be further reduced by removing those oligonucleotides that have high affinity for PrP^c. This more specific, reduced pool will be selected against enriched PrP^{sc} for final selection of the aptamers. For the initial phase of the experiments we will target a specific Tyr-Tyr-Arg sequence shown to be an epitope for a specific monoclonal antibody for PrP^{sc} (Paramithiotis et. al. Nature Medicine 2003, 9(7): pp 893-899). Construction of the peptide motif Tyr-Tyr-Arg was accomplished using the SPOTs kit from Sigma Genosys which utilizes Fmoc chemistry to construct peptides immobilized on cellulose membranes. These have subsequently been used in SELEX with a starting pool complexity of approximately 2.65×10^{15} (4.4

nmoles) ssDNA oligonucleotides. The ability to efficiently amplify a reduced pool of short ssDNA with novel primers was studied, and the subsequent polymerase chain reaction optimized. Experiments studying the interaction of a ssDNA oligonucleotide pool with a cellulose membrane were conducted to quantify and characterize specific and non-specific loss of the pool due to interaction with the cellulose membrane support. Enrichment of PrP^{sc} infected neural tissue for PrP^{sc} has been studied utilizing phosphotungstic acid precipitation, Western blot identification, and Coomassie Blue characterization.

Cognitive And Affective Ambivalence, Decisional Balance, Self-Efficacy, And Smoking Stages Of Change

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This project investigated cognitive and affective attitudes across the stages of change for smoking behavior (Prochaska, DiClemente, & Norcross, 1992). This project also investigated the association between the importance of college students' decisions to smoke and their self-efficacy for smoking cessation. One hundred seventy participants completed an online survey regarding smoking behavior. Measures included demographics, a stage of change algorithm for smoking (DiClemente et al., 1991), a measure of cognitive-affective attitudes, decisional balance for smoking, and a self-efficacy measure for smoking cessation. Cognitive and affective beliefs were analyzed across the stages of change with a one-way analysis of variance (ANOVA), which was significant for both cognitive and affective beliefs. Results indicated significant mean differences in cognitive and affective attitudes between stages of change. Decisional balance and self-efficacy were analyzed across the stages of change with a one-way ANOVA, which was significant for the cons of smoking behavior and self-efficacy for smoking cessation. Specifically, significant mean differences were found for the cons of smoking between the precontemplation and maintenance stage. Further, significant mean differences were found for the self-efficacy of smoking cessation between the precontemplation, contemplation, and maintenance stages. Findings indicated that both cognitive and affective attitudes were lowest for precontemplators. Cognitive attitudes increased when smokers moved from precontemplation to preparation in the stages of change. Furthermore, affective attitudes were unchanged from precontemplation to contemplation, but increased from contemplation to preparation. For smokers in the maintenance stage, both affective and cognitive attitudes were high, with affective attitudes being the higher of the two. The action stage appeared the same as the contemplation stage, indicating that smokers who were in the early stages of cessation may have been experiencing a period of contemplation about whether to continue quitting. Regarding the cons of smoking, these findings indicated that cons were lowest for people in the precontemplation stage and highest for people in the maintenance stage. Cons were relatively stable across the contemplation, preparation, and action stages. Regarding self-efficacy of smoking cessation these findings indicated that self-efficacy was lowest for people in the precontemplation and contemplation stages and highest for people in the maintenance stage. Self-efficacy was relatively stable across the preparation and action stages. These effects may help to explain the relapses that smokers often experience when attempting to quit and may provide insight into the reasons why smokers typically cycle through the stages of change several times before reaching the maintenance stage.

Learning English As A Second Language: Forming Comparative English Adjectives By Native Speakers Of Spanish And Japanese

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Presentation Subject Area: Social Sciences

The research investigated the role of first language rules on second language acquisition. The research focused on how English language users form comparative forms of adjectives. English grammar books (e.g., Shertzer, 1986) and ESL textbooks (e.g., Rutherford, 1968; Sharp, Muller, Claney, & Cole, 1995) typically dictate the following rule:

Monosyllabic adjectives and disyllabic adjectives ending in -y should be used with the suffix *-er*; all other adjectives should be used with the premodifier *more*.

For example, the monosyllabic adjective *cute* is predicted to be preferred when used with the suffix *-er*, as in *cuter*. The disyllabic adjective *happy* is predicted to be preferred when used with the suffix *-er*, as in *happier*. The three syllable adjective *important* is predicted to be preferred when used with the premodifier *more*, as in *more important*.

Prior research has shown that native English speakers do not follow this pedagogical rule (Kennison, Friel, & Brannon, 1998; 2003). Some monosyllabic adjectives are preferred when used with the premodifier *more* (e.g., *fun, frank, sane, fair, drunk, blunt*). Some disyllabic adjectives not ending in -y are preferred when used with the suffix *-er* (e.g., *narrow, gentle, subtle, little, shallow*). Consequently, students studying English-as-a-second language are not likely to receive ideal instruction in the use of these adjectives. Rather, the amount of exposure to English may be an important factor in students' gaining native-like proficiency.

The present research extends prior research reported by Friel, Harris, and Kennison (2002). Friel et al. (2002) compared the preferences for comparative adjective forms from three groups of participants: (1) native American English speakers; (2) German-English bilinguals whose first language was German; and (3) Spanish-English bilinguals whose first language was Spanish. They found that two factors influenced ESL participants' preferences: (1) similarity of the first language rule and the English language rule for forming comparative adjectives and (2) the length of time participants had spent learning English.

In the present research, additional participants provided preferences for forty comparative adjective forms. A sentence frame was presented for each adjective. A blank appeared in the sentence. To the right, two choices were presented: a suffixed comparative form for the adjective and the premodifier form for the adjective. Participants were instructed to circle the form that fit best in the sentence. Participants were either native English speakers or speakers for whom English was a second language. The latter group participants included participants whose first language was Spanish and Japanese. The results replicated Friel et al.'s (2002) findings. Usage preferences were influenced by the similarity of the first language rule and the English language rule and the length of experience with English. These results are consistent with prior research showing that first language rules can influence second language acquisition (MacWhinney, 1997; Seliger, 1989; Stockwell, Bowen, & Martin, 1965). Pedagogical implications will be discussed.

Temperature Behavior Of SOI CMOS Transistors

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Presentation Subject Area: Physical Sciences & Technology

The temperature behavior of SOI CMOS transistors is discussed. Sixteen die of various channel lengths were measured at temperatures of 30 to 180 degrees Celsius. The temperature dependence of mobility, threshold voltage, leakage, and Early voltage were determined. The mobility and leakage trends differ from behavior reported in current literature. The effects of the temperature relationship of SOI transistors in analog and digital circuits are presented.

The Internet And Infidelity: A Study Of Chat Rooms Created For Individuals Who Are Married

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As a growing method of communication, the Internet creates a new territory to explore for our society. Much of our society is struggling to understand all the very intricate details of rules, responsibilities, and realities this new medium brings to our lives. The Internet has opened the world to many new sites, sounds and people. In this paper, I share the results of my two-week observations in the Internet world of chat rooms. Chat rooms that were chosen had the word 'Married' in the title. I entered each room at different times of the day, once representing myself as a female chatter and the next time representing myself as a male chatter. In these observations, I found that both men and women used the chats rooms at their capacity limit and that men visited chat rooms at a much greater degree than women. Because the Internet offers instant access to connections, gratification, and escape, the temptation to indulge becomes significant for unhappy individuals.

Verification Of A Jitter Model For Voice Over Ip

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Presentation Subject Area: Physical Sciences & Technology

Model verification is a very important part of a mathematical model's development. This research describes the verification of a Multi-Structure Inter-Arrival Jitter model for a Voice-Over IP application for use in a secure communications system. The model was designed to accurately represent the delay structure of the Internet, which includes numerous complex and time-varying parameters. Empirically collected data, obtained from real-time network performance tests and simulations, was compared to model data using various statistical analysis techniques including the Kolmogorov-Smirnov test and the aggregate variance

test to determine a goodness of fit for the model data. These tests, among others, were used to establish confidence that the model was an accurate depiction of real world data within certain bounds.

Automated Aerial Refueling (Aar)

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Presentation Subject Area: Physical Sciences & Technology

The objective of the NASA Dryden Flight Research Center Automated Aerial Refueling (AAR) project is to define a dynamic drogue model that predicts the behavior of a hose and drogue configuration. This is intended to be done by isolating the effects of variables such as flight conditions, hose effects, tanker and receiver effects, and turbulence. Such model will ultimately be applied to automate the task of aerial refueling of Unmanned Aerial Vehicles (UAVs).

AAR relied extensively in the heritage of the Autonomous Flight Formation (AFF) project, from which AAR used the same airplanes, research team, GPS technology, airborne telemetry, and flight formation techniques. Two F/A-18s were used, one acting as a tanker and the other as a receiver aircraft. Two wing tanks with fuel and an Aerial Refueling Store (ARS) from the Navy, containing the mechanisms for extension and retraction of the hose, were added to the tanker. The receiver aircraft was able to command its position relative to the tanker's GPS antenna through Binary Coded Decimal (BCD) switches. In addition, position in XYZ was maintained through an X gage and Instrument Landing System (ILS) needles. Closure rates were also monitored. The position of the drogue and hose configuration was tracked using the video from two sets of cameras installed on each airplane. These cameras were subjected to an extensive process of calibration and flight verification prior data flights.

During AAR Phase 0, 11 flights were completed with the purpose of verification and envelope expansions of the tanker carrying the ARS. Phase 1 of the project consisted of 12 data flights at 7500, 25000, and 30000 ft and at speeds ranging from 175 to 295 KIAS . Although the analysis of such flights is still under process, preliminary results indicate that there is no effect of the hose weight on the drogue position and during stabilize cruise (at all altitudes), the drogue positions 7 ft higher at 195 KIAS than at 295 KIAS.

Configural Learning Is Correlated With Mental Rotation But Not Immediate Memory

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Presentation Subject Area: Social Sciences

The hippocampus is central in memory consolidation and learning; it is also thought to be essential to creating configural associations, but not elemental associations (Gluck & Myers, 1993; Rudy & Sutherland, 1992; Sutherland & Rudy, 1989). Elemental associations are involved when an individual is exposed to a number of independent elements and learning is based on response and reward. Each independent element

can gain associative control of behavior. In other words, learning is a function of the mathematical summation of the rewards associated with responses. Configural learning, on the other hand, requires the individual to create compounds from simple elemental units, and it is the strength of this compound that determines the response. Configural learning requires the individual to construct a unique representation of the joint occurrence of the independent elements of a compound that is distinct from its component elements. The transverse patterning problem is a task that was developed to explore deficits in configural learning. This task consists of three stages. Phase I and II can be solved using only elemental associations, while phase III requires the creation of a configural association in order to respond correctly and obtain reinforcement.

The present experiment had two purposes. The first was to develop a transverse patterning procedure for use with college students. The second was to examine this task's relation to other tasks thought to involve the hippocampus in a normal population. In this study, 116 college participants completed an immediate free recall memory task, an immediate recognition memory task, a mental rotation task, and a computerized version of the transverse patterning task.

Approximately 75% of participants were successful at completing all three phases of the transverse patterning task. Participants required a mean of 36 trials (minimum possible = 22) on phase I, 37 trials on phase II, and 53 trials on phase III. This difference between the number of trials required to meet criterion on phase I and phase II differed significantly from phase III, $F(1,109) = 604.4, p < .0001$.

Correlation coefficients were calculated to determine the relationships among tasks. Results showed that the transverse patterning task was significantly correlated with the mental rotation task, $r(110) = -.26, p < .01$, but to neither of the memory tasks. Further, the memory tasks were significantly correlated with one another $r(110) = .25, p < .01$. Therefore, these data appear to indicate that the transverse patterning task and the mental rotation task measure different functions than the free recall and word recognition tasks. These different functions may indeed be associated with the hippocampus but operate independently. Alternatively, the free recall and word recognition tasks may have been measures of other neural systems, possibly the frontal lobes. The fact that these memory tasks were immediate rather than delayed is consistent with this notion.

Enhancing Stimulus Integration In A Consumer Information Processing System: A Theoretical Foundation

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Presentation Subject Area: Social Sciences

Researchers and theorists in the field of marketing, more specifically consumer behavior, have much to gain by understanding and expanding the existing assemblage of knowledge about information processing and the theories related to this topic. The most seemingly unified theory of information processing is the information integration theory (IIT) developed by Anderson (1971). This theoretical approach concentrates on the ways individuals accumulate and organize information to form attitudes toward various concepts including individuals, objects, situations, or ideas. However, it is important to consider the limitations of humans as information processing systems when applying the concepts of integration theory to marketing and other organizational operations and research. Multiple causation and the proper integration of multiple stimuli result in the formation of judgments and perceptions that guide individual thought and behavior. Although multiple stimuli integration is an important component of information processing, it is equally

important to consider the limitations of human cognitive capabilities. The limited processing abilities of individuals may cause a reduction in the accuracy and effectiveness of information integration, especially when the amount of available information, or stimuli, increases beyond an optimal level (Kanaan, 1993). Information integration theory and information overload should be mutually considered to most effectively understand and predict the formation of attitudes. Therefore, a model of integration-filtration is proposed and should be a useful tool for considering both information integration and overload. The addition of stimuli will have a positive influence on the effectiveness of the stimulus field to influence the formation and changing of attitudes until the optimal level of available information is achieved. Once the optimal level is exceeded, the effectiveness of the stimulus field to influence the formation and change of attitudes will decrease with the addition of more stimuli. Most individuals will not attend to the entirety of the stimulus field. Rather, only a segment of the available stimulus field will capture the attention of the individual, those stimuli deemed as relevant and comprehensible. Once the individual recognizes an observable set of stimuli, a process of filtration occurs as the individual sorts through the stimuli to find those of interest and usefulness for goal attainment. These remaining stimuli are transformed into subjective representations and the process of integration continues as proposed by integration theory.

Now That You're Up And Running: Server Security Compliance In Steady State

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Presentation Subject Area: Physical Sciences & Technology

You've followed proper security procedures and configured your servers properly when you installed them. But some have been in production for years, others for a few months. User accounts have been changed as employees come and go. New applications have been added and others retired or changed. How do you know all your servers are still configured properly?

Server security has received a lot of attention the last few years. Most organizations have developed baselines for server configuration, and several organizations (like The Sans Institute) provide free templates. In addition, there are exceptions to the baseline (usually for functional accounts) where management accepts some additional risk in exchange for increased functionality.

What does it mean that your servers are in compliance for security? It means that the baseline policy is followed except for the approved exceptions. An audit on each server will verify that the server is in compliance with the policies. This audit should be done on a regular basis - even daily if possible.

The audit can be conducted in several ways. First, you can manually audit your servers. This is a very time consuming process and is not cost effective in most cases. Second, you can have a centralized automated process that polls each server and verifies that it is in compliance. Third, you can have a process on each server that sends information to a central location for auditing.

This paper will explore the definition of a security compliant system and the audit process for servers. It will also explore the automation of the audit process and the value of a daily audit.

Wilderness Visitor's Perceptions Toward Wilderness Management: Biocentric And Anthropocentric Perspective

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Presentation Subject Area: Social Sciences

Personal orientations and philosophies of Wilderness users toward management policies and actions were studied among Oklahoma State University students enrolled in rock climbing and backpacking classes. Results of this research indicated that more anthropocentric approaches to wilderness management are appropriate to maximize the quality of wilderness visitor's experiences than biocentric approaches. Since the most appropriate approach to management may vary from one wilderness to the next, further research should emphasize that each individual wilderness unit should identify the suitable system that will assist managers in finding the appropriate balance between providing quality recreational opportunities for wilderness visitors and preserving wildness.

Pathogenicity Of Sclerotium Rolfsii And Rhizoctonia Spp. On Peanut And Winter Wheat.

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Presentation Subject Area: Biological Sciences

Peanut (*Arachis hypogaea* L.) and winter wheat (*Triticum aestivum* L.) are occasionally rotated in some parts of Oklahoma. However, the effect of rotation on the incidence and severity of soilborne diseases such as southern blight induced by *Sclerotium rolfsii* and Rhizoctonia root rots induced by *Rhizoctonia* spp., is not understood.

Investigating the pathogenicity of these fungi on peanut and winter wheat will result in a better understanding of the effect of these diseases on rotation. Our first objective was to determine the pathogenicity of *S. rolfsii* isolates selected from peanut and wheat on selected peanut and winter wheat cultivars. Preliminary experiments with *S. rolfsii* suggests that isolates from peanut are more pathogenic on winter wheat cultivars but the same is not true for wheat isolates inoculated onto peanut cultivars. Although preliminary, these results imply that peanut-wheat rotation may increase the occurrence of southern blight on wheat caused by *S. rolfsii*.

Rapid And Safe Measurement Of Lycopene Concentration In Watermelon Flesh Using Spectroscopy.

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Presentation Subject Area: Biological Sciences

Lycopene is the most effective antioxidant for preventing cancer and cardiovascular diseases in humans. Among fresh fruits and vegetables, red fleshed watermelon has highest lycopene content followed by red tomato. The present method of lycopene quantification in watermelon is a tedious process involving extraction of lycopene in hazardous organic solvents followed by use of spectrophotometer or HPLC. To simplify the quantification of lycopene in watermelon, a safe and fast method is required that can eliminate the use of hazardous solvents. The objective of this study was to determine the correlation between spectral data from watermelon flesh and lycopene concentration so that the lycopene concentration can be estimated directly without sample preparation. An OceanOptics S2000 fiber optic spectrometer was used to acquire absorbance spectra from watermelon flesh in the visible wavelength range of 400 to 760 nm. Thin slices (2 mm thick) of watermelon flesh were used as samples for transmittance spectra. Sample cubes (1cm) were used for reflectance spectra. Least squares and PLS regression were used for correlation of spectral data with lycopene content measured by hexane extraction/spectrophotometry. An absorbance index obtained by subtracting absorbance at 700nm from that at 565nm showed linear correlation with lycopene content ($R=0.86$). Using multivariate PLS regression in the spectral range of 550 to 750 nm, the correlation coefficient was nearly the same ($R=0.82$). The PLS model for reflectance spectra had a correlation coefficient of $R=0.98$ with a standard error of correlation of $SEC=1.22$ and a standard error of prediction of $SEP = 3.00$. The high linear correlation between spectral reflectance and the reference measurement suggests that this method can be used reliably for fast and safe quantification of lycopene concentration in watermelon flesh. This result can also be the basis for designing an optical sensor for estimating lycopene content in watermelon.

Refugee Voices: The Impact Of An Ngo

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Presentation Subject Area: Social Sciences

Public policy concerning unaccompanied children in immigration detention is undergoing an evolution. Because the Immigration and Naturalization Service was dissolved in March, the responsibility of unaccompanied immigrant minors was transferred to the recently formed Department of Homeland Security's Office of Refugee Resettlement. This paper details proposed changes in public policy as well as current practices for such children. Amnesty International, the world's largest grassroots human rights organization, released a report in June 2003 entitled "Why Am I Here: Children in Immigration Detention." Its findings were based upon questionnaires distributed to former contracted facilities of the INS. Findings suggested human rights violations of unaccompanied children in these facilities such as denied access to legal representation and translation services, indefinite periods of detention, and controversial methods of age verification. Proposed changes for these practices have been outlined in the 2003 Alien Child Protection Act, sponsored by Senator Dianne Feinstein (D-CA). This public policy paper details the change in general refugee restrictions since September 11, 2001 as well as its impact upon immigrant children in detention. By analyzing literature relevant to this matter as well as offering personal narratives from unaccompanied children in immigration detention gathered by Amnesty International, a more thorough understanding of the refugee population and current federal regulations is offered.

Regime Change: The Failings Of The Current International Security Legal Regime, And Prospects For Change

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Presentation Subject Area: Social Sciences

The current international security legal regime, that is, the legal framework that guides the use of force among States and dictates the conditions necessary for a State to act on its inherent right to self-defense, is irreversibly flawed, rendering it useless in the contemporary international security environment, and must be replaced by a new legal framework if international law is to retain its relevancy. The replacement international security legal regime must allow for anticipatory self-defense, yet not in the dangerously ambiguous form that it currently exists in, as outlined by the 2002 National Security Strategy of the United States of America. Such a regime change is necessary, for in the complex and dangerous contemporary security environment, the State's ability to take preemptive military action is essential if State leaders are to live up to their responsibility of providing the greatest amount of security possible to their citizenry.

Intercultural Communication: Who Needs It And Why?

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Presentation Subject Area: Education

All business is international business today. From the smallest street vendor to the largest Fortune 100 company, businesses today communicate on a global scale. The customer of the street vendor may be from any country in the world just as the customer of the large corporation may be from anywhere in the world. Gornick and Milliron (2003) state "it's time to respond to global forces with a global education strategy. . . We need to realize in the information age, all learning is global" (p. 4). Based upon the theory that all learning is global, students must learn to communicate with multiple cultures. In addition, diversity in U.S. cities is increasing. Not only are businesses facing growing diversity, educational institutions are growing more diversified. The growing diversity is posing a challenge for schools and educators today because many are not prepared to deal with the issue of diversity. Education is needed in the field of intercultural communications to prepare the educators of today to teach the multicultural students flooding the classrooms.

This paper reports the results of a Delphi study conducted at Tulsa Community College and the results will be revealed during the presentation.

A Rainfall Without Runoff Reduces Phosphorus Loss In Runoff From Litter Applied Pastures

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Presentation Subject Area: Environmental Sciences**

Land application of poultry litter to pasture elevates the concentration of phosphorus in surface runoff, and it is becoming an increased problem to sensitive water bodies. The objectives of this study were to assess the effects of surface application of poultry litter, rainfall/runoff sequences, and soil test phosphorus (STP) on dissolved reactive phosphorus (DRP) in surface runoff from pasture in a controlled greenhouse experiment. Seventy-two small-scale boxes, which measured 1.0 m long by 0.5 m wide and 0.15 m deep, were filled to a depth of 0.1 m with 75 kg of soils collected from two locations that differ in soil test phosphorus (STP). Two representative pasture soils (Nixa and Tonti) for the Ozark region were planted to bermuda, fescue and ryegrass to simulate permanent pasture systems typical of the Ozark region. Treatment factors considered for the experiment were poultry litter at a rate of 0.0 and 6.7 Mg/ha, low and high STP, and three runoff sequences (RS 1, RS 2 and RS 3). The latter refer to runoff-producing events starting from day 1, 4 or 7 after litter application. Composite runoff samples were taken at the end of 30 minutes of continuous runoff for each box. A 2X2X3 Factorial Arrangement of Treatments was employed to assess treatment effects on phosphorus losses in surface runoff. Poultry litter, runoff sequence, time and litter vs. time interactions were found to have a highly significant effect on DRP in surface runoff. Poultry litter had a significant effect on DRP until 18 days after litter application compared to the controls. Some time between 18 to 32 days after litter application, the effect on DRP became insignificant for any level of STP or rainfall sequence. Rainfall without runoff reduced DRP in first runoff events. It had also a significant effect on DRP for comparison made between RS 1 and RS 3 plots from day 7 to day 62.

Location Analysis For A Vermiculture Facility In The City Of Stillwater Considering Available City Property, Input Sources, Retail Markets, And Transportation Cost

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Presentation Subject Area: Environmental Sciences**

This presentation is a location analysis to determine the best position for a vermiculture facility in the city of Stillwater. The goal of this research will be to inform policymakers at OSU and the Stillwater city council where the facility should be located.

The waste stream consists of the material output of a community, region, or state. Approximately 70% of the material collected and transported to landfills is organic material that could be composted. The diversion of organic material from the waste stream effectively reduces landfill costs.

Vermicomposting utilizes earthworms to increase the production of the compost. One pound of earthworms can consume their weight in organic material every day. The resulting vermicast or worm excrement is a highly fertile and natural soil amendment. The vermicast can be marketed to retail centers, landscapers, and nurseries. Additionally, earthworms can be marketed to the fishing industry, fish and reptile breeders, and soil or agriculture enthusiasts for profit.

Considerations for the determination of the best location will be available city property, sources of organic material, retail markets, and transportation cost. These variables will be used to create a base location map utilizing Geographic Information Systems (GIS).

The Role Of Substance Abuse In The Lives Of Survivors Of Sexual Abuse

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Presentation Subject Area: Social Sciences

This research focuses on the harmful effects of sexual abuse and the vulnerability of survivors to abuse drugs. Sexual abuse may range from violence such as rape to more subtle abuse such as inappropriate touching by a trusted adult. The effects of sexual abuse may vary depending on factors such as type and severity, age of the child, the child's temperament, the child's resiliency, and the child's familial and community support. In many cases, the abuse may have life-long, devastating effects such as later substance abuse. This project addresses the following issues: (a) the social, psychological, and physical impact of sexual abuse on the lives of victims; (b) the tendency of survivors to later abuse drugs; and (c) the need for substance abuse treatment centers to not just treat the addiction but to also treat underlying problems such as sexual abuse. When treating substance abuse, issues such as sexual abuse must be considered since such painful circumstances in an individual's life may be driving the need to abuse drugs. This information is critical to the process of treating survivors of sexual abuse and those individuals who have turned to drugs to alleviate their pain.

Isolation, Characterization And Differential Expression Analysis Of Porcine Tissue Kallikreins

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Presentation Subject Area: Whiteman Award Presentation

Embryonic fetal loss is a major problem in swine industry. Kallikrein-Kininogen-Kinin system is believed to play a major role in uterine and placental angiogenesis during the first few weeks of gestation and is thought to be essential for embryonic and fetal survival in the pig. Kallikreins are members of a multigene family of serine proteases that are widespread throughout living organisms. They are found in diverse tissue specific patterns and are known to have highly diverse physiological functions such as fertilization, digestion, regulation of blood flow, blood coagulation, inflammatory responses, endothelial cell migration, tissue remodeling, tumor-cell invasion and programmed cell death as well as disease related specialized enzymatic activities in addition to their putative role in embryogenesis. We have isolated several BAC (Bacterial Artificial Chromosome) clones containing members of the porcine kallikrein gene family. We have mapped the kallikrein genes in the porcine genome using radiation-hybrid mapping technique. We have further isolated several porcine kallikreins using RT-PCR and conserved sequence information from orthologous human kallikrein genes. Furthermore, we are carrying out real-time PCR based, expression analysis to evaluate the expression of tissue kallikreins in the porcine endometrium and conceptus during the estrus cycle and pregnancy to help us better understand the role of the kininogen-kallikrein-kinin system in placental development and embryonic survival throughout gestation in the pig.

Effect Of Planting Date And Stocking Rate On Growth Performance Of Cattle And Grain Yield In A Dual-Purpose Winter Wheat System (Whiteman Award Competition)

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Presentation Subject Area: Whiteman Award Presentation

This experiment was conducted during the winter of 2002-03 to evaluate the effect of planting date and forage allowance on cattle performance and grain production in a dual-purpose winter wheat system. One hundred sixty-two crossbred steers (initial BW = 236 + 6 kg) and sixteen clean tilled wheat pastures were used in a completely randomized design. Steers were stratified by initial weight and randomly assigned to four initial stocking rates within an early or late planting date. Average forage allowances ranged from 217 to 980 kg DM/100 kg BW for early-planted wheat, and 162 to 709 kg DM/100 kg BW for late-planted wheat. Early planting provided 24 more grazing days than late planting, 120 vs. 96. Average daily gain, overall steer gain, and grain yield all responded in a quadratic ($P < 0.06$) manner, peaking around a forage allowance of 700 kg DM/100 kg BW. All cattle performance parameters were greater ($P < 0.01$) for early- than late-planted wheat. Daily gains of steers grazing early-planted wheat ranged from 1.02 to 1.21 kg, compared with 0.81 to 0.98 kg for late-planted wheat. Overall steer gains on early-planted wheat ranged from 123 to 145 kg, compared with 78 to 94 kg on late-planted wheat. Gains per hectare also responded in a quadratic ($P = 0.02$) manner, peaking at the lowest forage allowance and decreasing as forage allowance increased for both planting dates. Steers grazing early-planted wheat gained between 121 and 257 kg/ha. Gains per hectare on late-planted wheat followed a similar pattern and ranged from 165 to 94 kg. Grain yields were greater ($P < 0.01$) for late-planted wheat (2771 to 3921 kg/ha), compared to early-planted wheat (2367 to 3027 kg/ha). These data indicate that under excellent conditions cattle performance can be substantially improved by early planting. However, in a dual-purpose winter wheat system this advantage is partially offset by a subsequent reduction in grain yield.

Ensuring Data Integrity In Grid Environments

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Presentation Subject Area: Physical Sciences & Technology

Data integrity has to become one of the central concerns of large-scale distributed computing systems such as the Grid, whose primary products are the results of computation. In order to maintain the integrity of this data, the system must be resilient to diverse attacks and tampering. The system should also encourage positive influences on its integrity in addition to discouraging or eliminating negative ones. In this paper we develop a model of trust for Grid participants based on the use of reputation systems and associated feedback mechanisms.

Improving Individual Knowledge Worker Performance By Reducing Email Interruptions

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Presentation Subject Area: Physical Sciences & Technology

With the proliferation of various Information Systems (IS) technologies, especially emails, managers and professionals in modern organizations are getting more and more information nowadays that needs to be processed in a timely manner eventually resulting in Information Overload. Despite the availability of modern IS technologies, Managers and professionals are working more and more due to the increasing demands posed by this ever increasing information. One such IS technology that has become an indispensable mode of communication and information sharing in modern organization is email. In particular, emails have been known to cause interruptions in the processing of knowledge worker's main tasks thereby further increasing Information Overload and decreasing productivity. There is a penalty, in terms of extra reimmersion time, associated with every task that gets interrupted by email. In this study, we demonstrated and compared different ways in which this interruption affect of emails on the performance of a single knowledge worker can be reduced for different levels of information overload. Interruption affects on two different types of tasks were studied- simple and complex tasks. Prior research has shown that the best policy to respond to emails is every 45 minutes. Contrary to prior research, the findings of this study seem to suggest that there may not be one best policy for all types of working environments. It was found that, in most cases, knowledge worker performance could be improved by responding to emails 4 times in a given working day. Another major contribution of the paper is a contingency framework that prescribes a knowledge worker what policy to use in responding to emails under which working environment so as to reduce the affect of interrupting emails.

Relation Between C-Reactive Protein And Serum And Dietary Antioxidants In Individuals At Increased Risk For Cardiovascular Disease

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Presentation Subject Area: Biological Sciences

Cardiovascular disease (CVD) has become the leading cause of death in the U.S. in the last decade. Until recently, serum LDL cholesterol has been considered the best predictor of heart disease. However, almost half the cardiovascular events happen in individuals with normal blood lipids. Recent research studies show that some inflammatory markers may be better predictors of CVD since inflammatory processes play a part in the development of heart disease. In addition, there is strong evidence that antioxidants decrease the risk of CVD by blocking the formation of free radicals, decreasing oxidation and reducing inflammation. Many studies have explored the association between CVD, and inflammatory markers and antioxidants, but only a few studies have investigated the relationship between antioxidants and markers of inflammation. The purpose of this study was to determine the relation between serum and dietary antioxidants, and C-reactive protein concentrations in individuals at risk for cardiovascular disease.

Subjects in this correlational, cross-sectional study were adults aged 40 and older at risk for cardiovascular disease selected from the Third National Health and Nutrition Examination Survey (NHANES III) database. Laboratory values of CRP concentrations, 24-hour recall analysis, food frequency questionnaire, and Adult Household Questionnaire were used to gather necessary variables for the study. The correlation between serum antioxidants (serum vitamin C, A, E, beta-carotene, lutein/zeaxanthin, and lycopene), dietary antioxidants (alpha tocopherol, ascorbic acid, vitamin A, and beta-carotene), and CRP concentrations was

examined. Multiple logistic regression analysis was conducted in order to identify significant predictors of detectable CRP. The independent variables for logistic regression analysis included dietary and serum antioxidants, tomato intake, primary risk factors of CVD and multiple secondary risk factors. The level of significance in this study was set at $p < 0.05$.

CRP concentration was significantly negatively correlated with serum vitamin C, A and beta-carotene ($p < 0.001$). A logistic regression model including serum antioxidants, dietary antioxidants and CVD risk factors was a small but significant predictor of detectable CRP concentrations ($R^2 = 0.07$; $p < 0.001$). Dietary antioxidants (except vitamin C) were not significant predictors of detectable CRP concentrations. Higher serum concentrations of vitamin C, A, beta-carotene, and lycopene were significantly associated with a lower risk of having detectable CRP concentrations. Serum antioxidants were significant predictors of elevated C-reactive protein concentrations in individuals at risk for CVD. Some antioxidants, including serum vitamin E and dietary intake level of vitamin C, were associated with elevated CRP concentration.

Remote Sensing To Estimate Chlorophyll Concentration Using Multi-Spectral Plant Reflectance

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Presentation Subject Area: Physical Sciences & Technology

The presence of nitrogen and chlorophyll are directly related and chlorophyll may be used as an indirect indicator of nitrogen levels in fertilizer management systems. The non-destructive estimation of chlorophyll concentration in spinach was investigated by using estimators of biomass and chlorophyll yield. Biomass was estimated with percent vegetation coverage based on images taken with a digital still camera. Images were thresholded to produce pixel estimates of percent vegetative cover. Chlorophyll yield was estimated using reflectance based NDVI from a Plant Reflectance sensor, a WeedSeeker™ sensor, a Greenseeker Hand Held™ sensor, and a multi-spectral digital camera. Strong correlations were found between reflectance based NDVI and chlorophyll yield ($r^2 = 0.92$) and between biomass and projected plant area ($r^2 = 0.85$), but combined measures were not successful in predicting chlorophyll concentration.

Self-Discrepancy Theory: Theoretical Characteristics, Extension And Possible New Applications In The Field Of Marketing

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Presentation Subject Area: Social Sciences

Self-discrepancy theory, developed by Higgins (1987), has received considerable research attention in the field of psychology. This paper attempts to evaluate the work done on self-discrepancy theory to date, in order to determine how well it meets the criteria that characterize well developed theoretical models (Dubin 1969). The theory is traced back to its roots and the evolution of the theory is outlined with regard to self-regulatory focus.

Considerable support for self-discrepancy theory has been established through controlled experiments mostly based on college students. Researchers in the fields of psychology, management, and, to a limited extent marketing, have applied the theory to a range of phenomena. However, limited support exist in the form of applied studies which include real-world participants and situations.

In the last few years the theory of self-discrepancy and regulatory focus has been noticed by researchers in the areas of consumer behavior, framing of advertising messages and social marketing. The existing research is quite limited, but the potential use of concepts and phenomena presented by this theory is promising for future research.

Several possible areas are briefly explored and one potential research study is developed in the area of personal selling. An area of interest for personal selling has long been sales force motivation. As a result of the findings of the interaction between expectancy-value models and regulatory focus, it is possible to make significant contributions to this stream of research.

Feasibility Of Steam Generation From Gasified Pork-Processing Byproducts

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Presentation Subject Area: Physical Sciences & Technology

A pilot-scale, updraft, batch gasifier was designed, fabricated and tested at Oklahoma State University for gasification of food processing byproducts. An economic feasibility study was conducted using the thermal energy production potential from this research. For the subject Oklahoma food processing plant, this analysis indicated that 4.38×10^{10} BTU/year could be provided for steam generation which may be translated to approximately \$479,000/year in fuel savings.

Determining And Developing Cross-Cultural Adaptability Among Bible School Missionary Trainees

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Presentation Area: Education

Various trends in the general world missions movement indicate the need for better preparation of home country missionary training center students in cross cultural adaptability, as many missionaries often lack cross-cultural adaptability with which to reach and train across cultures. This is evidenced by the high frequency of failures of missionaries, both long-term and short-term, to complete the mission assignment or achieve only limited success.

The purpose of this study was to determine the effectiveness of cross-cultural adaptability training at a particular missionary training center, as judged by: currently active missionaries who were graduates of that missionary training center; also by staff members and adjuncts at that institution, by presently-enrolled students at that institution who have already had mission experience; and additionally to measure the levels

of cross-cultural adaptability of the school graduates with the Cross-cultural Adaptability Inventory (CCAI) psychometric instrument.

The research 1) identified the perceptions at attitudes of the missionary training center graduate missionaries regarding cross-cultural adaptability training received at the school and its subsequent applicability on the mission field; 2) identified other influences besides training that contribute toward individual cross-cultural adaptability; and 3) determined how training for cross-cultural adaptability can be improved at the missionary training center.

A predominantly evaluative descriptive qualitative case study approach was utilized, supplemented by quantitative data to clarify the qualitative data. Semi-structured interviews were conducted with 17 individuals across various categories of missionaries who are school graduates. There was also a focus group discussion with presently enrolled missionary trainees who reviewed the findings of the missionary training center graduates, adjuncts, and staff members and provided their own input on the three research questions. Additional semi-structured interviews were conducted with the school director and seven other school adjuncts and core faculty concerning program philosophy and also to verify graduate and student perceptions. Documents relevant to the school's training program were also collected and analyzed. Demographic data was obtained from all the research participants, and they also completed the CCAI psychometric instrument.

The research indicated that the perceptions of the missionary training center graduates regarding cross-cultural adaptability and subsequent application on the mission field were generally favorable with certain reservations in diverse areas such as lack of language immersion training, development of interpersonal and conflict resolution skills, how to overcome culture shock, coping with limited primitive infrastructure in undeveloped countries. Answering this research question was made complex by the fact that the school underwent a major format change recently and also by the phenomenon of the rising number of short-term missionaries and the decrease of long-term missionaries.

The research also revealed that the influences that contribute to individual cross-cultural adaptability, besides formal training, are often based on previous demographic background factors and personal intangibles. Many respondents noted the significance of a transformative learning experience that led to the focusing and commitment of one's life to world missions.

Recommendations from the respondents for improvement of the cross-cultural adaptability training included modifying the curriculum and school culture to bring about more perspective transformation among the students, plus practical preparation to minister more effectively across cultures.

The building and maintaining of relationships, intercultural communication, self-directedness, character development, flexibility, and adaptability also emerged as significant factors in enhancing individual cross-cultural adaptability on the mission field.

Enhancements Of DNA Typing Procedures Applied To The Analysis Of Trace Evidence

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Presentation Subject Area: Biological Sciences

In prior studies from this laboratory, and from the work of others, it has been shown that a percentage of the population deposits sufficient DNA in their fingerprints to allow DNA typing to be performed. Oils in the skin and other debris in the fingerprints are likely to be the source of the DNA, and in 'shedders', there is a sufficient quantity within the fingerprint for typing of STR-type genetic loci using routine methods.

The primary focus of the research presented here was to investigate the reliability of standard DNA typing methods used to type trace evidence often remaining at a crime scene. In particular, spent bullet casings were used as a source of trace amounts of DNA recovered from the fingerprints of shedders loading a 9 mm pistol. DNA was extracted from the shell casings using standard methods and was amplified using the Profiler Plus STR typing kit from Applied Biosystems (Foster City, CA). Primers are included in the kit for amplification of 9 different STR loci as well as the amelogenin locus for sex determination. PCR products were analyzed with an ABI310 Genetic Analyzer using Genescan and Genotyper software.

Results demonstrated that DNA can be recovered from the fingerprints deposited on both brass and aluminum shell casings after discharging the bullet. Therefore, neither the heat of firing nor the metal substrate renders the DNA template unsuitable for PCR amplification of STR loci.

The results of this study confirm and extend observations made by others regarding the ability to perform DNA typing with fingerprints and emphasize the utility of bullet casings as a source of usable DNA for the investigation of violent crime. Present studies are underway to extend our observations to other types of forensic evidence that could bear fingerprints of perpetrators.

Gestation Length And Pregnancy Rate Of Early And Late Fall Calving Beef Cows.

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Fifty Angus x Hereford cows were blocked (year 1) by prior calving date and randomly assigned to early (E, August) and late (L, October) fall calving groups. The E and L groups were artificially inseminated (AI) in early November or early January, respectively, with semen from the same sire. All cows were exposed to a bull at 4 d after AI for 35 d. Both groups grazed prairie grass pastures with natural shade. Supplemental protein was fed to maintain a body condition score (BCS; 1 = emaciated, 9 = obese) .5 through AI. The E cows had a shorter ($P < 0.09$) gestation than L cows ($E = 280.1 \pm 1.2$, $L = 283.0 \pm 1.1$). Maximum daily temperature during the week prior to calving averaged $34 \pm 3^\circ$ and $19 \pm 3^\circ$ C for E and L cows, respectively, with 100% survival of calves in both seasons. Ovulation synchronization (year 2) was accomplished by administering 100 μ g GnRH (Cystorelin, Merial) and an intravaginal progesterone releasing insert (CIDR; Pharmacia Animal Health) on d 0, 25 mg PGF₂' (Lutalyse, Pharmacia Animal Health) and CIDR removal on d 7, and 100 μ g GnRH and AI on d 9. All E and L cows had luteal activity (progesterone 0.5 ng/ml) prior to ovulation synchronization. BCS was similar ($P > 0.10$) for E and L cows at breeding ($E = 5.2 \pm 0.1$, $L = 5.5 \pm 0.1$) and at the end of winter supplementation ($E = 4.5 \pm 0.1$, $L = 4.8 \pm 0.1$). Pregnancy rates were similar ($P > 0.10$) for the E (93.1%) and L (96.0%) cows. With adequate shade and proper management, calf survival is good in August and October. Maintenance of BCS .5 until AI in early November or early January resulted in all cows with luteal activity and excellent pregnancy rates. Additional observations are necessary to evaluate the effects of ambient temperature on gestation length.

The Technologies Of Proteomics

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Popular opinion concerning the origins of life and where that first cell came from vary. Some believe that the ribozymes in ribonucleic acid (RNA) progressed enzymatically toward the formation of the first cell. Others believe that amino acids collecting in puddles were heated by the sun causing them to form protenoids. Ultimately, it is protein enzymes, which are necessary for deoxyribonucleic acid (DNA). The very purpose of a cell is nothing more than a structure designed to synthesize the proteins necessary to produce the enzymes that allow DNA to replicate. Proteomics is the quantitative analysis of proteins present in an organism at a certain time and under certain conditions (Lottspeich 1999). Each sequence leads to an individual shape, which in turn leads to each individual protein's function. Twenty amino acids form billions of possible protein combinations. Each cell in our bodies contains more than 5000 different kinds of proteins, each with a specific function to perform. Recognizing and identifying proteins has become a modern day challenge for science. This literature review will examine the most effective methods currently used for protein identification.

A New Approach Towards Arsenic Removal From Drinking Water Using Nanoparticulate Metal Oxide Aggregates

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Presentation Subject Area: Physical Sciences & Technology

Nanotechnology has a bright future for many applications including clean up of the environment and purification of drinking water. Unfortunately, the application of nanoparticles in a typical column used for water treatment is hampered by their extremely small size, which causes them to be easily washed out of the bed or clog filters. We have solved this problem by developing a facile route for the synthesis of micron-sized agglomerates of nanoparticulate metal oxides. Loading ion exchange resin bead with desired metal cations and subsequent firing produced spherical ceramic replicas of the beads that consist of nanocrystalline oxides. The porous spheres have relatively high surface area and good mechanical strength, and their shape enables optimal packing in columns for water treatment. Zinc oxide aggregates have shown very promising results towards arsenic remediation. Water treated with these aggregates is in compliance with the new stringent USEPA standard for arsenic for drinking water.

Fault Classification On Vibration Data

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Nowadays, technological breakthrough and innovations have endowed humans with the ability to design more sophisticated equipments to perform new tasks. However, as complexity of machine function increases, maintenance on equipment has become more complicated since it is harder to identify the faults that may cause equipment failure. Therefore a health monitoring system has been envisioned as the solution to facilitate continuous monitoring of the equipment autonomously. The basic operation of a health monitoring system is fault classification. The aim is to classify potential faults that may lead to the breakdown of the equipment.

The main objective of this study is to construct a feasible health monitoring system involving multidimensional sensors and which is composed of a wavelet feature extractor, a proposed feature selection scheme and a neural network classifier. The proposed feature selection method is a synergistically integration of Local Discriminant Bases (LDB) algorithm and the Genetic Algorithm (GA). The LDB algorithm pre-selects a set of “good” features from a compilation of features gathered through the wavelet packet analysis. Only then, GA will be applied to search for an optimal feature subset that will serve as the foundation for fault classification. In this study, Radial Basis Function Network (RBFN) is chosen to serve as the fault classifier. The proposed fault classification system is applied to the Westland vibration data set to evaluate the performance of the proposed feature selection method. The results show that the proposed feature selection method produces a generalized feature subset as opposed to the statistical-based feature selection criteria. In addition, the combination of LDB and GA provides at least 50% reduction on the total number of features without compromising the classification performance.

Bach Quotations And Rhetorical Intent In Brahms' *Begräbnisgesang*, Opus 13

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Brahms' exploration of earlier musical forms and textures is unique among prominent Romantic composers. In the past decade, many scholars have investigated the influence of early music and events in Brahms' life on his choral compositions. *Begräbnisgesang*, Brahms' earliest published work for mixed chorus, is the subject of the current study. The origins of the piece are explored, including its classification within the German sub-genre *Trauermusik*, and three possible quotations of J. S. Bach are discussed, especially their function within the works' rhetorical scheme.

An Optimization Approach To The Capacitated Vehicle Routing Problem

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Transportation cost typically constitutes more than half of the total logistics costs. Many industries transport their products to or pick up raw materials from a large number of geographically scattered customers. For instance, farms are geographically scattered, hence the task of scheduling vehicles to pick up raw materials from farms, by processing industries, can be a big challenge especially when minimization of

transportation cost must be taken into consideration. Furthermore, the cost of transportation is a significant part of the costs of goods. So it is important that deliveries are made in a cost-efficient manner. Decreased transportation costs can be achieved through better utilization of resources such as labor and vehicles. The benefit that may be achieved by reducing the transportation costs is of interest to businesses at the micro level, and to the country at the macro level. Vehicle routing research is concerned with finding ways to determine optimal or near-optimal routes for delivery/pickup vehicles in a distribution system. In this study, a mixed-integer mathematical programming model is implemented in the General Algebraic Modeling System (GAMS) and used to determine the minimum travel distance for a truck that must travel from a processing depot, procure product (for example, milk) from farms and return to the depot. The objective is to determine the minimum distance to be traveled by the truck, which has a limited capacity. Given a cost per mile the model minimizes the total transportation cost of procuring the raw materials from all possible farms and delivering them to the processing depot.

Neural Mechanisms And The Perception Of Time

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Some psychologists argue that there can be no perception of time because there are no receptors for time. Furthermore, there is no physical or chemical stimulus to which neural structures could respond. There is no environmental time, only physical events 'contained' in time. Others note that if there were a "time sense", it must be an internal process that changes with the passing of time, such as beating of the heart or breathing. Is there neurobiological evidence for the existence of time perception? Current neurobiological theories of time perception as it relates to circadian rhythms, event time, and interval timing will be reviewed in an attempt to determine whether the time perception is cognitive or if it is the result of physiological factors.

There can be no doubt that circadian rhythms are present in both animals and humans. In humans, circadian rhythms refer mainly to wake-sleep cycles and fluctuations in hormones and temperature. Most neurobiological research has studied the role of the suprachiasmatic nucleus (SCN), the "master clock" of the brain and nervous system, in the regulation of circadian rhythms. In addition, light adjusts circadian rhythms in animals and possibly humans via a direct pathway between intrinsically photosensitive retinal ganglion cells and the SCN. The neurobiological approach to time perception has shown that mammals do indeed seem to have an innate sense of the passage of time regardless of the lack of specific receptors for time perception.

Little is known about neurobiological mechanisms involved in event time perception. However, because events occur in sequences within space and time; episodic memory is an important aspect of event time. Episodic memory is characterized by a conscious awareness of prior experience and by the capacity to "travel back in time" mentally. In the brain, hippocampal neural circuits may encode the flow of events, and many other areas of the brain may separate events into distinct temporal units. At this time it seems that many areas of the brain are involved in event time perception, including sensory and motor areas.

More is known about the perception of temporal intervals in the brain. Many structures and pathways are implicated in the ability to accurately discriminate temporal intervals. These structures include the prefrontal cortex (PFC), an area associated with planning and executive functioning; the cerebellum, an area associated with movement; and the basal ganglia (caudate nucleus, globus pallidus, and putamen), also involved in

movement. The pathways and subsystems include dopamine pathways from the basal ganglia to the thalamus and motor nuclei of the brainstem. Because so many structures and subsystems are involved in temporal interval perception, the perception of temporal intervals may occur in the brain in several different ways, depending on the task. It is clear that the mammalian brain is capable of the 'perception' of time.

It is likely that the brain pieces together both innate and learned time sensation and provides us with a perception of time. Time perception may be 'hardwired' into many neurological structures so that temporal perception is neurologically possible.

Some Like It Hot: The Texas Horned Lizard-Prescribed Fire Relationship

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The Texas horned lizard (*Phrynosoma cornutum*) has experienced apparent large-scale declines throughout its range, particularly in Texas. We studied the effect of prescribed burning (a habitat management practice of increasing popularity) on the ecology of the Texas horned lizard in a thornscrub savanna. We assessed home range size, habitat selection, survival rates, and prey abundance of horned lizards in 4 treatments. Home ranges in the summer-burned-grazed treatment were smaller than those in the other treatments (winter-burned-grazed, unburned-grazed, and unburned-ungrazed). Survival rates in burned sites were higher than in unburned. The survival functions also differed between burning treatments, with survival declining in early summer in the unburned areas and in late summer in the burned areas. Lizards selected for whitebrush (*Aloysia gratissima*) and avoided Texas persimmon (*Diospyros texana*) consistently across treatments. Selection or avoidance of other woody species was not consistent among treatments. Smaller home ranges in the summer-burned treatment suggest that lizards are finding prey and cover in a smaller area, indicating a beneficial effect of summer burning. Ant activity, used as a surrogate of ant abundance, has been historically higher on burned sites on our study area. Therefore, more food, or better food-cover interspersed, may explain the higher survival in burned areas and the smaller home ranges in summer-burned areas. We conclude that prescribed burning in a thornscrub savanna provided favorable ecological conditions for Texas horned lizards.

The Use Of Appendage Mobility, Sting Viability, And Central Excitatory State As Identification Techniques In Distinguishing Between European Honey Bees (*Apis Mellifera Lingustica*) And Africanized Honey Bees (*Apis Mellifera*)

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An estimated 50 people die per year due to the venom of stinging insects; however, up to two million Americans are allergic to insect venom. These statistics are of interest to public safety given the northward expansion of Africanized honey bees. Since the escape of African honey bees in São Paulo, Brazil, in 1957,

they have traveled north at an estimated rate of 300 to 500 kilometers per year. Currently, Africanized honey bees are in Texas, New Mexico, Arizona, California, and Nevada. A key to understanding the expansion of Africanized honey bees is the identification and discrimination of this aggressive form from its more docile European relative. The ability to identify Africanized honey bees has increased in difficulty due to the interbreeding between African and European honey bees. Current identification techniques have a degree of success, but each has its own set of problems, prohibiting wide-spread adoption and use. The objective of this study was to address the issues of expense, application, and accuracy during the identification process, and to devise an identification technique useful to the public confronting the expansion of the Africanized honey bee. This study examined aspects of central excitatory state, persistence of mobile appendages and a viable sting after decapitation for their utility in distinguishing between these two sub-species, because of their lack of the need for specialized equipment or training. The utility of central excitatory state was examined using the Proboscis Extension Reflex. Two groups consisting of seven sets (distinct time intervals) of 25 bees were tested for each sub-species. We collected, harnessed, and stimulated bees with water only or with sucrose followed by water, and recorded their response. For the second portion of this study, we euthanized five groups of 25 bees for each sub-species by decapitation with the use of forceps. At each specific time interval, we recorded the presence of mobile appendages or a viable sting. Central excitatory state was not found to be useful in distinguishing the Africanized honey bee from the European honey bee; however, appendage mobility and sting viability were found to be significantly different between the two sub-species. No European honey bees were recorded to have mobile appendages or a viable sting at or beyond 24 hours, but we did find a 22.40 percent chance for Africanized mobility and a 16.80 percent chance for Africanized viability at 36 hours after decapitation. Significant differences were found between the two sub-species at 8 hours for mobility and 16 hours for viability. Our research concluded that appendage mobility and sting viability are useful techniques for distinguishing the two sub-species, and alleviate the issues of expense, application, and accuracy for the public. These techniques can be utilized by all, and do not require extensive training or expensive equipment.

Extrusion Based Robotic Deposition Of Ceramic Inks

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Extrusion Based Robotic Deposition of colloidal gels can be used to fabricate three dimensional periodic structures. The aqueous colloidal gel (inks) developed for deposition must have a suitable visco-elastic response so that they can be squeezed through a small diameter nozzle on application of modest pressure but immediately set on deposition and possess shape retention characteristics. This provides a challenge because the ink must be shear thinning and have a high yield stress at the same time. The ink must also have a high concentration of solids to prevent cracks formed due to drying stresses. In our research we have developed ceramic inks consisting of sub micron sized barium titanate powders. Ink rheology was characterized using both dynamic and oscillatory measurements. Barium titanate structures were created using an extrusion scheme. Implications of ink design on the deposited structures will be discussed.

Development, Modification, And Fit Analysis Of Liquid-Cooled Vest Prototypes Using 3-D Body Scanner

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A liquid cooled vest can play an important role in decreasing first responders' thermal stress inside of PPE under hostile and hot environments. As conduction is the primary cooling mechanism for LCGs, the need for direct physical skin contact is required for this type of heat transfer. Despite this need, little research has been done regarding the fit of liquid cooled vests. The purpose of this study was to develop and modify two liquid cooling vest systems and to compare the fit of both systems through use of a 3-D body scanner. Only size large vests were developed and tested in this research. This research consisted of three phases: 1) application of existing anthropometric data to determine a vest size classification system, 2) prototype development and construction, and 3) prototype fit analysis and evaluation. In the first phase, an army anthropometric study was used as to develop systematic sizing scheme. In the second phase, one liquid cooled vest (prototype I) was newly developed and another liquid cooled vest (prototype II) was modified from an earlier phase of the project. Both prototypes used the same fabric and tubing but used different design and attachment of fabric and tubing. Prototype I was a pullover style vest and tubing webs were hung in the diagonal direction between the inside and outside layers of the vest. Prototype II was a zip front vest and heat and constructed with adhesive bonding of the tubing and the two fabric layers in a sandwich construction. For the third phase, thirteen subjects, mainly first responders, were recruited and scanned with the 3-D body scanner in each garment treatment and in each body position. Subjects completed a perceived fit ballot after the scanning process. Scanned images were shown to an expert panel and a visual fit evaluation ballot was independently completed by each member. Three types of analyses were conducted: 1) comparison of body measurements 2) perceived fit evaluation 3) visual fit evaluation. First, body measurement data between the sample group and army personnel were compared. It was determined that the selected database was representative of the user population. Secondly, ratings from the users' ballot indicated that both prototypes acquired high ratings. Prototype II acquired higher scores in ease of donning and doffing and overall design preference. Thirdly, scanned images were evaluated by expert panel. Both prototypes received high scores in the visual fit ratings although prototype II received higher ratings than prototype I in many body areas.

Grassland Bird Response To Disking/Interseeding Of Legumes On Conservation Reserve Program Lands In Northeast Nebraska.

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Throughout the Midwest, grassland bird populations are declining at a faster rate than any other group of birds. The primary cause of this decline is habitat loss caused by changes in agricultural practices, specifically the conversion of prairie habitats to large, homogenous crop fields. Loss of native prairies in some regions of the Midwest is as high as 99% and remaining prairie patches are often small and fragmented. In the 1985 Food Security Act (the Farm Bill), the Conservation Reserve Program (CRP) was established to retire highly erodible cropland from production for 10-15 years. The cropland is planted to grasses, trees, or other perennial cover and this cover is maintained for the life of the enrollment period. The primary goal of CRP was to limit production and reduce soil erosion. However, because of the long-term nature of the program, wildlife benefits were substantial. Today there are approximately 31 million acres of

CRP lands enrolled in the United States with 1.15 million acres occurring in Nebraska. Typical plantings in the initial enrollment consisted of a single cool season grass, smooth brome (*Bromus inermis*), combined with some type of legume (*Trifolium* spp.). In the early years of the program, these plantings provided a diverse habitat consisting of a mixture of grass and various forbs and legumes that provided excellent habitat for many types of wildlife. However, due to succession and the inhibiting nature of smooth brome, these once productive fields became a monoculture of smooth brome that has a limited value to wildlife. In the summer of 2002, the Nebraska Game and Parks Commission initiated Focus on Pheasants, a program that advocated disking and interseeding legumes into the aging CRP fields to curb declining ring-necked pheasant (*Phasianus colchicus*) numbers. The program is aimed at setting back succession and restoring diversity to the aging fields, which will make the fields more desirable to wildlife. Although the program was initiated in response to declining game bird populations, we believe nongame grassland birds will also benefit greatly from the disturbance. The objectives of the study are to 1) Evaluate grassland bird response to disking and interseeding CRP by monitoring grassland bird abundance and nest productivity, 2) Evaluate vegetative characteristics of the study sites, and 3) Conduct educational efforts on study sites to promote this program. Grassland bird abundance and nest productivity will be evaluated beginning in May 2004. Birds will be surveyed on 8 fields that have been disked and interseeded and 8 control fields that have not been disked and interseeded. Bird abundance will be surveyed by walking along predetermined transect lines and recording all birds observed 50 meters on each side of the transect line. Nest productivity will be determined by searching plots established in the study fields for nests and monitoring those nests until their fate is known. Final results are expected by fall of 2005.

Parent And Stepparent Behaviors In Relation To Adolescent Empathic Concern

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An important aspect of adolescent social competence is the ability to relate effectively to others. One component of effective social relationships is the ability to feel compassion for others in need, or empathic concern. Since earlier research indicates that adolescent perceptions of parental behaviors relate to adolescent empathic concern, the present study investigated the extent to which reports of parent and stepparent behaviors relate to empathic concern for adolescents in remarried families. Using self-report questionnaire data from a sample of 74 ninth and tenth grade students, living in remarried families, adolescents' perceptions of parent and stepparent behaviors were examined in relation to adolescent empathic concern (the ability to feel others' feelings). Two hierarchical multiple regression analyses were conducted: (a) one examining demographic variables (sex of the adolescent, stepfather family vs. stepmother family) in step 1, followed by the perceptions of parental behaviors (step 2) in relation to adolescent empathic concern, and (b) one examining demographic variables (sex of the adolescent, stepfather family vs. stepmother family) in step 1, followed by perceptions of stepparental behaviors (step 2) in relation to adolescent empathic concern. The parent and stepparent behaviors examined are: support, love withdrawal, punitiveness, and effectiveness in (step)parent-adolescent communication. In the parent model, sex of the adolescent and effectiveness in parent-adolescent communication were significantly related to adolescent empathic concern, while only sex of the adolescent was significantly related to adolescent empathic concern in the stepparent model. Both the parent and stepparent models explained significant variance in empathic concern. Consistent with research using broader samples of adolescents, adolescent girls reported higher empathic concern than adolescent boys. Further, adolescents in remarried families who perceive they have effective communication with their parent in the stepfamily also reported higher empathic concern.

However, perceptions of other parent behaviors and stepparent behaviors did not explain variation in empathic concern for adolescents in remarried families. Recommendations for future research will be discussed.

Porcine Innate Immunity: Distinct Tissue Expression And Transcriptional Regulation Patterns Of Porcine Beta-Defensin-1 And -2.- (Whiteman Award Competition)

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Mammalian antimicrobial peptides, which are broadly effective against a wide range of pathogens, constitute one of the most important mechanisms of innate host defense. Aberrant expressions of these peptides have been linked to certain human diseases. Beta-defensins comprise an important family of antimicrobial peptides with six invariantly spaced cysteine residues. We have cloned the first beta-defensin, namely pBD-1 in pigs and found it capable of killing *Escherichia coli* and multidrug-resistant *Salmonella typhimurium* DT104. Here we report the identification of a second porcine beta-defensin, pBD-2 by searching through the GenBank database. The deduced peptide from the full-length pBD-2 cDNA is 69 amino acids in length, sharing only 26.1% identity with pBD-1, but consists of six consensus cysteine residues. In contrast to pBD-1, which is predominantly expressed in tongue, pBD-2 is widely expressed in skin epidermis and throughout mucosal epithelia of respiratory, gastrointestinal and urogenital tracts. Stimulation of porcine jejunal epithelial cell line with bacterial lipopolysaccharides, peptidoglycan, lipoteichoic acid, and heat-inactivated *E. coli* did not result in induction of pBD-1 or pBD-2. Consistent with the *in vitro* data, pBD-1 and pBD-2 were also constitutively expressed in the intestinal tracts of pigs infected with *S. typhimurium*. Taken together, constitutive expression of pBD-1 and -2 on mucosal surfaces may help pigs fight off opportunistic infections. The discovery and functional characterization of these antimicrobial peptides will facilitate development of new approaches to enhancing disease resistance and preharvest pork safety.

Measurement Systems Analysis - A New Approach Accounting For Within-Appraiser Variation

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In a competitive manufacturing environment, critical decisions are made based on data obtained from randomly sampling production units. The effectiveness of these decisions depends on the quality of the data and the degree to which the numbers can be trusted. This increases the need for a dependable measurement system. The process of estimating and analyzing the error due to a measurement system is known as Measurement Systems Analysis (MSA).

Automotive Industry Action Group [AIAG], led by General Motors, Chrysler and Ford, published a manual on MSA that has become the de-facto standard for any manufacturing company that wishes to analyze its measurement systems. The analysis presented is based on a two-way random effects model also known as the components of variance model.

Even though it is not immediately obvious, this analysis implicitly assumes that there is no within-appraiser variation. In other words, it assumes that an appraiser can measure one part using the same equipment multiple times with the exact same degree of accuracy. Any variation resulting in the measurements taken as mentioned above are attributed to poor equipment. In the real world this assumption may not hold. Making this assumption artificially inflates the variation due to equipment and makes the definition of appraiser-variation very fuzzy. This may result in companies allocating critical resources to, for example, reduce equipment variation while the problem lies in appraiser inconsistency.

Accounting for within-appraiser variation makes the model more realistic. We will show using simulation that the traditional MSA fails to estimate the true components of variance in such a case. The intent of this research is to develop a methodology that will accurately estimate the true components of variance.

Trends In School Site Design

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Presentation Subject Area: Education

This study gathers the stories of experienced architects specializing in school design and construction. These stories provide the perspectives of the architect's experiences within the profession and also insight into future trends in school site design. A qualitative methodology with an interpretivist perspective combining interviews, document examinations and observations of work sites was used to better understand the following questions:

- What were the experiences of an architect within the last twenty years?
- What future trends were identified?
- What advice did they offer to school leaders and policy makers?

The study examines the perceptions and meaning that architects make of their experience, explores the language used to describe those experiences and locates multiple explanations of the trends in school site design.

Method Development For Human Subject Wear Testing Of Personal Cooling Systems

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Presentation Subject Area: Environmental Sciences

Hazmat workers are the target users for a prototype cooling system designed by an OSU research team, working in collaboration with an interdisciplinary academic/industry team. As part of the design process a human subject wear test of the prototype system under controlled laboratory conditions was planned to determine the system effectiveness.

Assessment of the cooling system effectiveness should reflect the real life challenges of a Hazmat worker. To that end, a methodology was developed to simulate the workload and the type of activities that Hazmat workers do during real life incidences. An Environmental chamber was equipped with an obstacle course designed to simulate work typically encountered. A protocol was designed for volunteer human subjects to perform in full protective ensemble with a self-contained breathing apparatus and cooling unit. A 30- minute duration was specified because that is length of time Hazmat workers typically stay in the hot zone due to air bottle limitations. The protocol starts with a short and slow walk on the treadmill to simulate walking to the hot zone. The second obstacle is a small 2- step apparatus with boxes of varying weight and volume designed to simulate the searching for equipment needed for the specific task and carrying them over to the zone. Workers often experience reduced vision. Excessive humidity built-up causes the face shield to fog up impeding completion of tasks that require manual dexterity. Next activity is designed to assess the ability to perform such tasks under reduced vision and couple of layers of protective gloves. Conditions over the hot zone terrain and worker's balance over uneven surfaces are simulated by another activity which is followed by another treadmill walk mimicking the walk back to the rescue truck, carrying the equipment, or part of the supplies back. An appropriate design methodology would allow researchers to assess if the cooling system effectively alleviates the problems created by the heat and humidity production inside impermeable Hazmat suits. The method used in this study not only considers the workload of the exercise but also provides an important cognitive evaluation tool by providing relevant procedures.

Competency-Based Programming: Payne County Youth Shelter Evaluation

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Using a qualitative approach ,the author explores the opinions, thoughts, and beliefs of youth workers known as Youth Guidance Specialists(Y.G.S.),concerning competency-based programming, a strength-based, solution-focused approach for working with youth.

In-dept narrative interviewing was conducted with 6 of the 11 of the Payne County Youth Services (P.C.Y.S.) Shelter's employees. P.C.Y.S. shelter is an emergency, short-termed non-profit placement for youth who are experiencing difficulties at home or in other placements. The Y.G.S. were asked to share their stories of how competency-based programming works for them as youth workers. Many times the Y.G.S. have valuable information to bring to the table in regards to programming, yet these individuals are often times never asked for their opinions, beliefs or thoughts about effective programming for the youth they work daily with. Analysis of these data reveals 3 overarching themes. These findings are discussed in terms of their implications for youth workers and others involved in the service of youth.

Azoreductase Activity In Intestinal Microorganisms

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Presentation Subject Area: Biological Sciences

Azo dyes are commonly used in the paper, textile and drug industries. The azo bridges (N=N) in these dyes can be reduced by the azoreductase enzyme which is present in more than 40 anaerobic intestinal microorganisms. The azo reduction yields amines, some of which may be potential carcinogens. The azoreductase from only a few anaerobes have been well characterized biochemically and genetically. Based on previous biochemical studies, it is suggested that there are different isoforms of azoreductase from different microorganisms. Their functional role is unclear as there are varying degrees of specificity and product synthesis. Genetically, only eight bacterial azoreductase genes have been identified. *Clostridium perfringens* is the only intestinal anaerobe whose azoreductase gene has been identified. The primary amino acid sequences are significantly different, making it difficult to classify azoreductase into a particular family of enzymes. The goal of this study was to identify common intestinal genera with the highest azoreductase activity and to rescue the gene encoding for the azoreductase activity. The azoreductase activity assay used Direct Blue 15 as the substrate to determine the rate of reduction based on whole cells and cell-free supernatants. The activity was determined by a loss of dye color in the medium as well as reduction in the 615nm wavelength. *Enterococcus faecalis* was identified as having the most efficient activity. The rate of reduction by *E. faecalis* was estimated to be similar to *C. perfringens*, which has a high rate of reduction. To rescue the gene that encodes for azoreductase, a size-selected plasmid library was used to isolate the fragment of genomic DNA that codes for azoreductase. The genomic DNA of *E. faecalis* was digested with EcoR V and ligated into the pETBlueTM-1, an expression vector. The clones were screened using the azoreductase activity assay. Our biochemical and genetic investigation will contribute to a better understanding of azoreductase in *E. faecalis*.

Alkylation And Dimerization Of Isobutylene Over Nafion-H/Silica Nanocomposite

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Presentation Subject Area: Physical Sciences & Technology

Because of the growing concern about MTBE's pollution on the ground water, removal of MTBE from gasoline will probably be obligatory in more and more states, as already is in California. Highly-branched alkane, i.e., TMPs, from alkylation process is the ideal alternative for MTBE as high-octane-number additive. Unfortunately, the existing commercial alkylation processes are using hazardous and corrosive HF or H₂SO₄ as liquid phase catalyst, which caused a lot of environmental problems also. Therefore, it is highly desirable to search for environmental-friendly solid acid catalyst for alkylation processes.

Nafion-H silica nanocomposite, which entraps small Nafion particles in the porous silica framework, has been proved active in many acid catalyzed reactions. In this project, we investigated the activity and selectivity of Nafion-H silica nanocomposite as catalyst for butylenes(1,2 and iso-butylene) alkylation with isobutane and isobutylene dimerization.

Experiment investigation was performed with an Autoclave Engineers Micro-BTRS system. An online HP 6890 GC with FID detector was used to analyze the effluents from the reactor. GC-MS analysis analysis was performed to determine the structure of product molecules. Two Isco syringe pumps were used to feed isobutane and isobutylene. Reaction temperature, isobutane/isobutylene ration and reactant/catalyst ratio were changed to investigate the effect of these parameters on products distribution. More than 150 hours continuous reaction was performed on a single load of catalyst, so as to investigate the stability of catalyst. Pure isobutylene dimerization reaction and co-dimerization of isobutylene/ 1-butene were also performed.

When isobutane and isobutylene mixture was used as feed, Nafion showed very good activity and stability, in term of isobutylene conversion. Conversion of isobutylene decreased from approximately 100% to around 85% while reaction temperature decreased from 70C to -20C. At 70C reaction temperature, approximately 100% conversion was observed after more than 140 hours continuous reaction. The alkylate selectivity was amazingly low, though, as most of the products were olefins, which indicated isobutylene dimerization and trimerization reactions dominated. No molecule of C5-C7 was detected, which indicated that β -scission reaction was negligible. C8 olefin selectivity kept decreasing while reaction temperature was increasing, as was 100% at 40C over fresh catalyst. Two dimers of isobutylene, 2,4,4-trimethyl-pen-1-ene and 2,4,4-trimethyl-pen-2-ene kept an approximately constant ratio of 4:1, which can be explain by two standard enthalpies of formation: -79.1 and -87.3kj/mol. Co-dimerization of isobutylene of isobutylene/1-butene gave out more than 80% high octane number TMP olefins, and others are low value DMH olefins.

In conclusion, Nafion silica nanocomposite is a good choice for isobutylene dimerization reaction, for its high selectivity toward C8 olefins and long reaction time under mild reaction conditions. An optimum reaction for dimerization can be located around 50C, which gave out about 90% isobutylene conversion and around 80% TMP olefin selectivity.

Effects Of Sodium Perchlorate On Hormone Levels And Metabolic Rates Of The Western Fence Lizard

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Presentation Subject Area: Biomedical Sciences

This research was designed to determine the effects of long term *in ovo* perchlorate exposure on the metabolic rate of western fence lizard embryos *Sceloporus occidentalis* and hormone levels of subsequent hatchlings. Eggs were collected from a laboratory population of fence lizards on the day of oviposition and incubated on perchlorate-spiked perlite at 28°C. Perchlorate is able to cross the eggshell and accumulate in embryonic tissue at levels exceeding exposure concentrations. Perchlorate is known to prevent iodide uptake by the thyroid gland, which interferes with synthesis of the thyroid hormones, thyroxine (T4) and triiodothyronine (T3), which may decrease the metabolic rate of embryos. Doses greater than 15 μ g perchlorate/g incubation substrate delayed or inhibited the pipping response in fence lizards. Tissue concentrations of thyroid hormones in hatchling lizards were inversely related to perchlorate concentrations in the incubation substrate. Weekly metabolic rate, determined via O₂ consumption, was measured in individual eggs. After three weeks of exposure, embryos incubated on perlite spiked with perchlorate concentrations above 150 μ g/g respired at a lower rate than controls, a trend that continued until the control embryos hatched. Ongoing research will determine effects of perchlorate on whole body corticosterone levels at hatch as well as the effects of *in ovo* perchlorate exposure on reproduction and sprint speeds after exposed lizards mature.

Estimation Of Imperfection In The Markets For Timber From The South Pacific Region Of Colombia

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Presentation Subject Area: Social Sciences

Among the many challenges facing the managers of Colombia's forest ecosystems are conflicts between the sustainable utilization of the forest and the equitable distribution of the benefits associated with harvest of timber products. Markets play a role in the communication of society's preference regarding the sustainable utilization of forest and the equitable distribution of benefits. However, the preferences of societies may be distorted because of imperfections in markets. In order to improve the understanding of the degree and nature of imperfections in Colombia's domestic timber markets and the degree of distortion resulting from these imperfections this study of the markets for timber produced for Colombia's South Pacific region was undertaken.

The objective of this research is to describe and estimate the degree of imperfection in domestic markets for timber extracted from the South Pacific Region of Colombia. This objective is achieved through: 1) a description of the structure of the timber industry in the Region; 2) an examination of behavior of participants in the Region's timber market; and 3) an evaluation of the performance of the Region's timber markets in the achievement of national economic goals. Based on the results of the examination of structure, conduct, and performance of the region's timber markets econometric analyses will be undertaken of selected timber markets to estimate the degree of imperfection.

Aptamer Selection For The Lipopolysaccharide Of E. Coli O157

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Presentation Subject Area: Biomedical Sciences

Background: *E. coli* O157 is a significant pathogen, causative of food-borne illnesses and a recognized bioterrorism threat. Following national goals for novel, robust diagnostic tools, the research objective is to discover whether aptamers can be used to detect *E. coli* O157 by targeting its lipopolysaccharide (LPS) - an externally presented, unique signature molecule present in high copy number. LPS is composed of a proximal, hydrophobic, anionic lipid A and a distal, hydrophilic, structurally unique O-polysaccharide polymer, which are connected by a core region. Aptamers are RNA or DNA oligonucleotides that bind targets specifically by ligand affinity. Traditionally, oligonucleotides bind each other via Watson-Crick base pairing. In contrast, aptamers bind targets on a physicochemical basis, akin to antigen-antibody interactions. Aptamers are selected from a random oligonucleotide pool by SELEX – systemic evolution of ligands by exponential enrichment - an *in vitro* iterative process that isolates binding aptamers from the random pool and amplifies each sequence by the polymerase chain reaction (PCR) after each round of isolation.

Methods and Results: The LPS target was isolated by a hot phenol:water extraction, was biotinylated, and was bound to streptavidin-coated magnetic particles. Thirty and eighteen rounds of SELEX were completed with DNA and RNA aptamer pools, respectively, and affinity for target was monitored by assays employing radioisotope-labeled aptamers. Affinity with the DNA pool was assessed at rounds 12, 21, and 30, with respective pool affinities of 3.2%, 0.5%, and 4.5%, and for the RNA pool, was assessed at rounds 12 and 18, with respective pool affinities of 0.4% and 0.3%, all of which never significantly exceeded background. Observing some increased affinity for the unloaded beads, we hypothesized that the streptavidin coating was a more favorable target for aptamers. Thus, we modified our approach by eliminating the bead matrix and biotin linkage; we immobilized the LPS onto nitrocellulose membranes and performed SELEX anew through 13 rounds. Affinity levels at rounds 4, 9, and 13 were consistently 0.3% and consistently did not exceed background levels.

Conclusion and Plan: Purified whole LPS from *E. coli* O157 is an undesirable target for aptamer affinity based on unsuccessful attempts using two different aptamer pools and two different presentation matrices. In purified form, whole LPS exhibits properties undesirable for aptamer interaction: hydrophobicity of the lipid A moiety and electronegativity possessed by phosphate groups on the lipid A and core moieties. Our current approach is targeting only the O-polysaccharide and some core components, a process made possible by the predictable effects of mild acid hydrolysis of the LPS structure. This approach is promising as it eliminates hydrophobicity, minimizes electronegativity, and preserves the specific signature region that is the O-polysaccharide

The Relationship Of Culture To Middle School Teacher's Use Of Instructional Technology

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Presentation Subject Area: Education

According to Regan (2002), in an online commentary entitled *Net Savvy Students to Teachers: You Just Don't Get It!*, 78% of middle and high school students use the Internet (probably a conservative figure), and that 94% of that number had used the Internet as a major research source for a recent major school project. Regan (2002) goes on to claim that a new report by Pew Internet and American Life Project found that the “most Internet-savvy among them [students] complain that their teachers don't use the Internet in class or create assignments that exploit great Web material.” He adds, “The students said they wanted to use the Internet for more of their schoolwork, but teachers too often lacked the imagination to use it for anything other than mundane tasks.”

While Regan is but one of several who have discussed this same scenario in schools across the United States, the message from each is clear: there were high expectations that the technologically-enhanced classroom would revolutionize teaching and learning and the tools needed to do that are now readily available. However, teachers lack an ability to understand and use technology as a real learning tool assigning students technology-based work that is not meaningful. In fact, students are better able to use technology tools than their teachers. The mass transformation of public schools expected by increased integration of technology has not occurred. In the public school setting, large numbers of students complain that their teachers are not IT-literate in that teachers do not use technology to its fullest capabilities in class or in assigning work (Regan, 2002). Teachers, like it or not, must adopt (or at least adapt) or they are doomed to fail to reach more and more of their students.

The purpose of this qualitative case study was to study the organizational context of two specific school sites in which instructional technology (IT) use by teachers is evident; to study what and who influences individual teacher preferences toward IT use; and to describe the relationship of Mary Douglas' (1982, 1989, 1992) grid and group typology in the decision process to implement IT use in curricula. From the descriptions of teacher preferences toward the use of IT, it is intended that (1) Douglas' grid and group theory will provide a useful framework for explaining teacher perceptions of IT use, roles and rewards, (2) through these descriptions, the schools' grid and group characteristics can be identified, and (3) identification of teacher preferences within the specific organizational culture of the school site will provide implications for future research and practice.

The following research questions were addressed in this study: 1) How is instructional technology used in classrooms in each of the selected school sites? 2) In what ways does the use of instructional technology reflect grid/group realities in each of the selected school sites? 3) What other realities were revealed in each of the selected school sites? 4) Was grid/group helpful in understanding differences in teachers' instructional technology use in selected school sites?

Software Licensing: A Moral Dilemma

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This paper explores the moral dilemma which confronts those charged with maintaining software licenses in school computer laboratory environments in the face of severe budget cuts. Often laboratory personnel find themselves needing to upgrade software or add new titles to the software library only to be stymied by the cost of appropriate licenses. This paper seeks to explore that dilemma and formulate a framework for deciding to follow the law rather than risk tarnishing a professional's reputation.

Response Of Grassland Birds And Terrestrial Invertebrates To Restoration Plantings On Upland Grasslands In The Rainwater Basin Region, Nebraska

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Presentation Subject Area: Biological Sciences

Due to the historic alteration of grassland ecosystems, restoration of grasslands has become a crucial tool in the conservation of declining grassland bird populations. Restoration of upland grasslands in the Rainwater Basin Region (RWBR) in south-central Nebraska has focused on high-diversity (>20 forb and grass species) or low-diversity plantings (4'5 grass species). Currently, little is known about the response of grassland birds or invertebrates to these plantings. Our objectives are to determine grassland bird habitat-use and nest productivity in restored grasslands, evaluate the response of the grassland bird community and terrestrial invertebrate community to these restoration treatments (high- and low-diversity plantings). We conducted bird surveys in restored grasslands during summer 2002 and 2003. We found no difference in mean avian abundance between years, but did find higher mean avian abundance in low-diversity than high diversity sites ($p=0.039$). Mean avian species richness differed between years, but not between treatments. We also

sampled four systematically placed vegetation plots per bird survey transect, measuring percent cover, visual obstruction, maximum vegetation height, and litter depth at each plot. Percent grass coverage and mean maximum vegetation height were the only variables that differed between years, and only height differed between treatments, with height for high-diversity plantings (56.28 cm, S.E.=3.41) being lower than that for low-diversity plantings (63.13 cm, S.E.=3.29; $p=0.012$). For overall nest productivity, 26% of the nests were successful, 65% failed, and 9% were unknown fate. We used the Mayfield method to calculate probability of nest survival and found that the probability of nest survival for all species was higher in high-diversity (25.14%) than low-diversity plantings (16.05%). Because a variety of factors (e.g., basin size, vegetation characteristics, surrounding landscape) likely influenced bird abundance and nest productivity at these sites, we plan to further evaluate the role of these factors in influencing grassland bird habitat-use and nest productivity. Invertebrate results for 2002 and 2003 will be addressed as well.

The Effects Of Two Motivational Strategies On Exercise Adherence And Exercise Self-Efficacy In College Females.

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Presentation Subject Area: Social Sciences

More than 80% of Americans are inactive. A sedentary lifestyle is associated with a host of serious health problems, including cardiovascular disease, hypertension, obesity, and Type 2 diabetes. Furthermore, about 50% of Americans who start an exercise program drop out. National data reveals that college students, especially females, are becoming increasingly inactive. This study examined the effects of two motivational strategies on exercise adherence and exercise self-efficacy in college females over ten weeks. Eighty-two previously sedentary subjects were recruited and given the same suggested exercise protocol to follow as well as initial fitness training. As a measure of exercise adherence, each subject was instructed to log her total weekly exercise time on paper or using the study's online exercise log. The subjects were randomized into three groups: a control group, an accountability group, and a road race group. The accountability subjects were given specific feedback on their exercise logs every week. The road race group was signed up to participate in a local 5K race. It should be noted that none of the subjects in any of the groups had ever participated in a race. Subjects in all three groups were invited to participate in supervised workouts and fitness lectures over the ten weeks. A 3X 5 repeated measures ANOVA revealed no significant changes in exercise time among the three groups over the ten week period. However, further analysis using a one-way ANOVA showed a significant difference (.001) between the control group and road race group at the onset of the study, and this difference held constant for the duration of the study. This finding indicates that the motivation of the road race elicited a positive response in the race group from the beginning, and this group therefore set and then maintained a higher exercise workload than the control group over the ten weeks. The attrition rate for the race group was only 8% while the other two groups experienced a 50% drop-out, similar to the national average. It appears the goal of the race motivated those subjects to both better adhere to the exercise program and also set higher training levels for themselves from the onset. Exercise self-efficacy, often seen as a strong predictor of exercise adherence, was measured in this study using a 5-point validated scale every week. No significant changes were seen among the groups over time, though this might be partially explained by the subjects' confusion with the instrument, as revealed through follow-up qualitative data. This study suggests that setting exercise performance goals can be an effective way to increase exercise adherence in previously sedentary college females. However, more research is needed, and in particular longer studies with perhaps a different instrument to measure exercise self-efficacy.

Does Diet Type Influence Digestive Performance In Two Species Of Box Turtles, Terrapene Carolina And Terrapene Ornata?

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Presentation Subject Area: Biological Sciences

Terrapene carolina and T. ornata are sympatric in Missouri; however they tend to be habitat specific. There is also some disparity in their diets, with T. carolina tending to be slightly more herbivorous than T. ornata. Differences in diet and habitat may require different digestive physiologies in these species. This study investigated the ability of these species to digest and then successfully germinate seeds from three different pure diets of fruit (blackberry, mayapple, and commercial strawberry). Blackberry was considered familiar to both species, mayapple considered familiar to T. carolina, and strawberry unfamiliar to both species. Fruit diet had a significant effect on digestive efficiency and gut transit rate. There was a significant difference in digestive efficiency between the turtle species that were fed strawberry diets, but not those fed blackberry and mayapple diets. This study suggests that diet-dependent differences in digestive abilities may exist between these turtles.

Development Of An Assessment Tool For Diabetes Prevention In Native American Adults

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Presentation Subject Area: Minority Issues

Native Americans are at a disproportionate risk for obesity and type 2 diabetes. Understanding the underlying cultural perceptions of health and diabetes would aid in the development of culturally appropriate diabetes prevention programs. The objective of our study was to develop and validate an assessment tool targeting diabetes prevention in Native Americans. Items for the questionnaire were developed from qualitative interviews conducted with Native American men and women in Northeast Oklahoma. An expert panel reviewed the assessment tool prior to administration. Native American men and women (n=185) completed the assessment tool. Mean age and degree of Native blood was 37 years of age and 69%, respectively. Principal axis factor analysis with Varimax rotation was conducted on the perceptions of health and diabetes items to identify the empirical structures to the two sections. Five underlying factors resulted from the perceptions of health, including lifestyles, barriers to health, personal responsibility, self-care behaviors and culturally-defined well being. Two factors described the perceptions of diabetes. A cognitive factor reflected knowledge derived from life experiences and the surrounding environment. The affective factor contained the emotional responses to diabetes. A valid assessment tool for the Native American population could provide valuable formative data in developing successful interventions aimed at diabetes prevention.

The Writing Process: How The Writing Center Is Helping Today's Students

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Presentation Subject Area: Humanities

This study examines the effect of one-to-one writing instruction on students' understanding of the writing process. At OSU, the writing center functions as a place where students can receive free peer-to-peer tutoring on all their writing related assignments. Through procuring help in the writing center, students gain awareness of their writing strengths and weaknesses, which helps to improve their writing ability. By analyzing what actions helped the student become a better writer, writing center tutors can improve their technique and thus enhance the OSU learning environment. After analyzing the data gathered, three conclusions can be made about the relationship between writing center tutors and students. First, raising awareness about the writing center, in addition to the existence of a writing process, helped the students involved in the research to take an active role in their writing ability. Multiple students in the study were unaware that one-to-one tutoring was available or that a place such as the writing center existed on the OSU campus. Furthermore, almost all the students involved claimed little to no knowledge or understanding of the writing process. Second, the one-to-one aspect of writing center tutoring humanizes the writing process for students and brings the act of writing to a more comfortable level for them. All the students involved in the study commented on how the immediacy of one-to-one tutoring aided them in quickly spotting and fixing their mistakes. In addition, students felt more at ease about asking questions concerning their assignments and mistakes in the one-to-one setting. Thus, this setting encourages the student to take a more active role in learning more about the writing process, while the principles of their English classes are still being enforced by the tutor. Third, students stated that the eagerness to help and overall pleasant disposition of the tutors during the tutorials helped them the most. The students were well aware that the tutor was more knowledgeable about the writing process, but they did not feel intimidated or condescended by the tutor throughout the tutorial. Moreover, the students said the tutors eagerness and attitude helped to reduce their anxiety about the tutorial and the writing process in general.

This project required no more than five hours of time from the ten subjects involved over the course of the 2003 fall semester. Subjects underwent three interviews in the form of questionnaires throughout the fall semester: a pre-information session, a post-tutorial interview, and a final post-research interview. Students saw an assigned tutor in the OSU Writing Center twice over the course of the semester, once after the Composition I diagnostic essay and once before the next assigned essay. Sessions with the tutor were tape-recorded. The requirements were that the student be 18 or older, enrolled in the Ryan Hendrix's Composition I class, and that they signed an informed consent form. The students' duties were over after the fall semester. The benefit of this study to the student was free assistance with their academic writing throughout the fall semester of 2003.

Development Of A Biopsychosocial Screening Inventory For Fmr-1 Gene Mutation 'At Risk' Status In Young Children

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Presentation Subject Area: Biomedical Sciences

This research study will further test the efficacy of a newly developed parent response psychometric tool, the Biopsychosocial Screening Inventory for Fragile X (BIPSSI-FX), to detect 'at risk' status for Fragile X Syndrome (FXS), in young children. FXS is the most common inherited cause of mental retardation and learning disabilities. The BIPSSI-FX was revised in accordance with recommendations of expert reviewers, theory and the outcome of a pilot study of 30 children, between the ages of 12 months to 18 years of age and their primary caregivers, in a large family in which there is a relative diagnosed with FXS.

This research study features a comparative exploratory field study design in which the revised BIPSSI-FX will be further developed by applying it to a cultural, geographical, ethnic and social economically diverse population of children. A website (<http://langston.osu-tulsa.okstate.edu/vthomas>) specifically designed for the study provides a mechanism by which primary caregivers may complete the forms online and return the forms by way of automated submission.

A convenience sample of at least 250 primary caregivers of children ages 12 months to 84 months have participated in the study. The primary caregivers of at least 50 children, who have FXS in the full mutation state (>200CGG repeats) have completed the BIPSSI -FX, the Modified Checklist for Autism in Toddlers (M-CHAT) the Primary Caregiver Information Profile and a diagnosis information form. Additionally, at least fifty parents of children diagnosed to have Down Syndrome (Trisomy 21) have completed the aforementioned measures. Also included for comparison is a group of at least fifty primary caregivers of children who have been diagnosed to have autism but do not have FXS and a group of at least fifty parents of typically developing children who have no diagnoses of learning disorders nor behavioral disorders and do not reside with children who have diagnosed FXS. The data collected are being analyzed for reliability, validity, sensitivity, specificity and utility of the BIPSSI-FX. Reliability of the BIPSSI-FX will be determined using Cronbach's alpha for each item and subscales. Mean group and subgroup scores will be compared with those of the M-CHAT. Criteria validity of the BIPSSI-FX will be measured by comparing mean total and subscale scores of the diverse diagnostic category groups. Discriminant analyses will be conducted to determine if the scores of the diagnostics category groups differ significantly on the two screening tools. Factor analysis will subsequently provide information about the subscales and items composing the BIPSSI-FX.

The revised BIPSSI-FX will show specificity to differentiate the unique characteristics of Fragile X Syndrome from those of other developmental disorders. Furthermore, the BIPSSI-FX will indicate sensitivity to differentiate children with FXS from those who are negative for FMR-1 gene changes. The BIPSSI-FX will facilitate early identification and intervention of children who are 'at risk' for FXS, thus promoting the potential for the individual and his or her family to have an enhanced quality of life and to contribute to society in a positive manner.

Unusual 3,7-Diheterabicyclo[3.3.1]Nonanes And Derivatives

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Presentation Subject Area: Physical Sciences & Technology

Treatment of several 3-oxo- and/or 3-thio-7-N-benzylbicyclo[3.3.1]nonan-9-ones with 6 different aryl Grignard reagents resulted in the formation of the corresponding 9-arylcarbinols. These compounds are important precursors for agent with potentially useful analgesic and antiarrhythmic activity. An unusual observations was made with respect to the configuration of several of two of the alcohols. A chair-boat conformation of the [NCH₂Ph, S] system with the nitrogen atom in the boat conformer was found to be the

form in the solid state via X-ray diffraction analysis of a single crystal. This novel discovery may lead to significant biological activity. Efforts are underway to generate carbamate derivatives of the unusual alcohols to ascertain if such do possess analgesic and antiarrhythmic activity in animal models. The syntheses of the derivatives will be delineated.

A Genetic Algorithm Design For Constrained Multiobjective Optimization

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Presentation Subject Area: Physical Sciences & Technology

Constrained and Multiobjective optimization are two interesting fields of operations research but have not been solved effectively by conventional optimization algorithms. At the same time developing techniques to deal with such problems is very important because most real-world problems are constrained in some way or the other and often have more than one objective.

Constrained optimization problems are very tricky by themselves because a major part of the search space is made infeasible due to the presence of constraints and finding feasible solutions itself becomes a difficult task. Also the nature of the constraints (nonlinear constraints, equality constraints etc.) makes things more difficult as there is no way to intelligently explore the feasible part of the search space. Adding to this difficulty is the presence of the objective function that has to be simultaneously optimized.

Multiobjective optimization involves optimizing multiple objectives simultaneously and the problem is often labeled as multi criteria decision making. Even though multiobjective problems are fairly common, the conventional approach is to combine these multiple objectives into a single objective. Then the optimization is carried out just as in single objective problems and one solution is arrived at for every combination of objectives.

In this paper, a genetic algorithm approach is used to solve constrained multiobjective problems. Genetic Algorithms are population based stochastic search techniques. After starting with an initial random population the population in the new generations is created from the existing one by using selection operators. Genetic operators like crossover and mutation are applied with an effort to making the population of solutions fitter in terms of satisfying the constraints and optimizing the objective function.

In the proposed algorithm, the constrained multiobjective optimization problem is solved in two phases and this assures the usability of the algorithm in real world problems. In the first phase all the objectives are completely ignored and the search is directed towards finding feasible solutions. Thus the first phase of the algorithm is simply a constraint satisfaction phase and this phase assures feasible solutions from the algorithm. A diversity operator is used in the parameter space in an effort to explore the search space and find feasible solutions even for problems with very small feasible regions. In the second phase the objectives are also considered in the fitness assignment with the constraint satisfaction. Non-dominated ranking is used to assign fitness to each individual. The diversity mechanism is used in the objective space to get a good spread of solutions. A unique fitness operator is developed which takes care of handling the constraints and optimizing the multiple objective functions simultaneously. The results with benchmark test problems indicate that algorithm is problem independent and produces consistent results in terms of the quality of the feasible solutions. The technique produced feasible solutions in every run of the algorithm and is thus dependable for real world problems.

Anaerobic Performance

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Various factors determine a person's ability to perform physical work and compete in sports. Success in some sports depends on skill. In others, success depends on muscle strength or speed of movement; and in some, one may be limited by one's stamina. A common denominator of all these activities is that they involve muscle contraction which can only be performed when biochemical energy is converted to mechanical energy in the form of adenosine triphosphate (ATP). There are three systems that create ATP within the muscle. This study focuses on the anaerobic system. Twelve women track and field athletes participated in the study. Events included jumpers, sprinters, distance runners, and throwers. The Wingate Power test was used to access the peak 5-second power, mean 30-second power, and the fatigue index. Absolute and relative scores were used to indicate the relative power of individuals with different body weights. Averages indicated that sprinters have the highest peak output, but the greatest fatigue index. These and other results help us understand anaerobic capacities (muscle power and fatigue) of women track athletes who perform in different events. This study serves as the first of a series of studies performed by exercise science students to help determine the effects of training on anaerobic power in track athletes.

Partitioning Of Exogenous D-Tocopherol Between The Triacylglycerol- And Membrane Lipid Fractions Of Ground Beef Muscle As Effected By Cooking

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Presentation Subject Area: Whiteman Award Presentation

Antioxidants are commonly added to processed muscle foods to inhibit undesirable changes accompanying lipid oxidation. Efficiency of antioxidants largely depends on whether or not they reach the site where oxidation occurs. Recent partitioning studies indicate ethanol is a suitable carrier to efficiently deliver d-tocopherol to the unstable membrane fractions of muscle where oxidation is initiated/propagated.

The objective of this study was to determine partitioning of vitamin E between the unstable membrane lipids and triacylglycerols of beef as affected by cooking.

Approximately 300ppm ethanolic d-tocopherol on muscle total lipid basis (13%) were added by spraying the solution onto ground beef while paddle mixing. Ethanol and water treated batches served as negative- and positive controls, respectively. Treatments were formed into patties and cooked to core temperatures of 85°C by an impingement oven. Partitioning of d-tocopherol between the lipid fractions was determined after physical separation by ultracentrifugation techniques. Membrane lipids were obtained from a muscle buffer homogenate (pH 7.5) by differential ultracentrifugation. Triacylglycerols were collected after 40-min centrifugation of cooked muscle at 130,000g at ambient temperatures. Tocopherol contents of the separated lipid fractions were determined by HPLC after extraction with organic solvents.

Based on absolute tocopherol amounts in raw meat, approximately 67% of the added tocopherol partitioned into membrane lipids, and 33% into triacylglycerols. This corresponds to approximately 10-fold higher tocopherol concentrations in the membrane lipids. Cooking of beef patties resulted in a 30% loss in d-tocopherol, part of which can be attributed to mass loss (40%). The tocopherol lost during cooking is primarily membrane-associated; approximately 50% of the initial amount in membranes. The amount of tocopherol in triacylglycerols increased approximately 20% after cooking.

Although cooking results in a significant reduction in membrane tocopherol levels, ethanol as an antioxidant carrier may raise the membrane tocopherol levels sufficiently to reduce oxidation in cooked meats.

Identification And Characterization Of A Beta-Defensin Gene Cluster In The Chicken - (Whiteman Award Competition)

**Yanjing Xiao and Guolong (Glenn) Zhang, Yoichi Matsuda, Jan-Fang Cheng,
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Presentation Subject Area: Whiteman Award Presentation**

Beta-defensins comprise a large family of small cationic antimicrobial peptides that are characterized by the presence of a highly conserved six-cysteine motif. As secreted products of leukocytes and epithelial cells of skin and respiratory, digestive and urogenital tracts, these peptides have been shown to play an important role in host defense and disease resistance in several vertebrate species. In chickens, three members of beta-defensins, namely gallinacin (Gal) 1-3, have been identified. Here we report the discovery of 10 novel members of beta-defensins in the chicken, which are termed Gal 4-13. These new peptides, deduced from the full-length cDNA sequences, vary from 64 to 104 amino acid residues in length, but all share the characteristic six-cysteine motif. In addition, all Gal genes have been found to be clustered densely within a 70.7-kilobase distance on the chromosome. In contrast to all known mammalian beta-defensin genes, which primarily consist of two exons, each Gal gene is composed of four short exons separated by three introns with variable lengths. Albeit of a close proximity, these Gal genes exhibit distinct tissues expression patterns. While Gal 1-5, Gal-12, and Gal-13 are predominantly expressed in bone marrow and the respiratory tract, Gal 6-11 are more restricted to liver and the urogenital tracts. Moreover, intravenous challenge of chickens with lipopolysaccharide (LPS) revealed that Gal 7-8 were not induced in lungs and livers. Collectively, this study represents the first large-scale detailed investigation of beta-defensins in non-mammalian vertebrates. Further analysis of these Gal genes may lead to a better understanding of the host defense mechanisms in the chicken and shed light on the development of innovative approaches to disease and preharvest food safety control.

The Age Dependent Relationship Between Broiler Breeder Reproductive Performance And Body Composition

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Presentation Subject Area: Whiteman Award Presentation**

The age dependent relationship between broiler breeder reproductive performance and body weight is well documented (Bornstein, *et al.*, 1984; Robbins *et al*, 1986; Robinson *et al*, 1993). Consequently, breeder management programs normally include restricting feed as a means of controlling body weight (BWT) to specific ages (Cobb-Vantress, Inc., 1998). However, body composition (BC) may potentially be a better guide to breeder productivity than BWT alone (Bornstein *et al*, 1984; Soller *et al*, 1984; Bennett and Leeson, 1989). Bornstein *et al* (1984) observed that there was a negative correlation between fat concentration and age at first egg. Observations by Soller *et al* (1984) and Bennett and Leeson (1990) revealed a positive relationship between lean tissue mass and time of sexual maturity. Therefore, the association of BWT and BC with nutrient intake may be critical to optimizing breeder production as well as better feedstuff utilization. The objective of the present study was to to examine the effects of three 14-week body weight classes and two feeding levels on subsequent body composition, egg production and heat production of broiler breeder females through 38 weeks. Results indicate that Statistical analysis of egg weight by age (week of lay), BWT class and feeding level (FL) revealed a 2-way interaction ($p < 0.05$) between BWT class X feeding level for all weeks excluding Week 1/Age 25 . Most notable was that the hens in the high BWT class and on the high feed level produced the smallest ($p < 0.05$) eggs for weeks of lay three/age 27 weeks though week of lay12/age 36 weeks. However, statistical analysis performed on percentage of eggs produced by BWT class and feeding level revealed that no 2-way interactions ($p > 0.05$) existed between BWTclass and feeding level. Production of double-yolk eggs for the entire flock never exceeded 2% during the twelve weeks of lay. Multiple Regression equations have been developed to learn the relationship between egg production and body composition as a differential. Mathematical three dimensional plots have been generated to discover the relationship between body fat, body lean and rate of change of egg production and egg mass.