

ABSTRACTS

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Biological Sciences

Functional Response of *Aphidius colemani* Viereck (Hymenoptera: Braconidae) on Greenbug, *Schizaphis graminum* Rondani (Homoptera: Aphididae) at Four Temperatures.

Douglas Jones

Entomology and Plant Pathology

Functional responses and super-parasitism by the parasitoid wasp *Aphidius colemani* Viereck (Hymenoptera: Braconidae) on greenbug, *Schizaphis graminum* Rondani (Homoptera: Aphididae), were measured at four temperatures (14 , 18 , 22 , and 26 C) during a 24 hour period (12 hr Light : 12 hr Dark). At each temperature, densities of 10, 30, 50, and 70 greenbugs were exposed to individual female wasps. To help ensure that the female was mated, a male wasp was introduced along with the female. A total of 11 repetitions were performed. All greenbugs were dissected 3 days after exposure. Data were analyzed with SAS general linear models procedure. At all temperatures, *A. colemani* followed type 3 functional responses that were not significantly different ($P = 0.05$) from each other. Parasitism ranged from ~ 85% at the lowest densities to ~ 65% at the highest densities. Temperature significantly influenced super-parasitism at low host density (29% @ 14 C to 56% @ 26 C). Observed super-parasitism at high host density was similar across all temperatures (4% @ 14 C to 14% @ 26 C).

Effect of Insect Exclusion on Incidence of Yellow Vine Disease in Squash

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Entomology and Plant Pathology

Yellow vine disease of cucurbits, associated with a phloem-limited bacterium, causes rapid wilting and death in affected plants. In a previous study, fields treated with insecticides had lower incidence of yellow vine than did untreated fields, suggesting that insects are involved in the transmission of the bacterium. In the study reported here, we compared incidence of yellow vine in uncovered squash plants (*Cucurbita pepo* var. *melopepo*) and squash plants covered with fine mesh that excluded insects. Seeds of yellow squash were planted at 0.45-meter intervals and within 24 hours the row cover was stretched over flexible PVC hoops and anchored in the soil. The row cover was removed after 50 days, at which time plants were destructively sampled by harvesting the crown and root. Seven percent of uncovered plants and 0 % of covered plants were positive using Dienes' stain, which highlights callose deposits in phloem of plants with advanced infection. Using primers specific for the bacteria associated with yellow vine, 25 % of uncovered plants and 0 % of covered plants were positive when analyzed by polymerase chain reaction. These differences supported the hypothesis that insects are involved in the transmission of the bacterium.

Influences on Folate Intake - Perceptions of Older Men and Their Spouses

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Nutritional Sciences

Heart disease is the leading killer of Oklahomans, and the death rate in our state is one of the highest in the US. One of the B vitamins, folate, is negatively related to plasma homocysteine levels in the blood. Elevated homocysteine levels are thought to be a risk factor for coronary heart disease. In-depth structured interviews were conducted with 40 Oklahoma men > 60 years and separately with 20 of their

wives. The purpose was to determine factors that influenced food consumption, and perceptions about folate rich foods and supplements. Interview questions were based on social cognitive constructs. Wives were asked questions regarding their husband's food intake. Content analysis of interviews with wives revealed that perception of food as healthy (n=14), and habit, convenience, and husband's likes/wants (each n=5) were the primary influences of foods prepared at home. Chi square analysis of matched husband/wife pairs (n=20) suggested that over half of the pairs agreed on the influence of the wife, a health crisis, and health professionals on men's selection of fruits, vegetables and grains; foods high in folate. Wives obtained most of their health information from magazine articles/books (n=16), newspaper (n=10), and TV (n=8). Almost all (11/15) pairs agreed that the husband would eat a fruit, vegetable, or grain if served with a meal. Most wives (n=15), and husbands (n=28) knew very little or nothing about folate. The pairs did not agree on the best way to increase folate; men more frequently chose supplement (n= 18) whereas the wives thought their husbands would choose cereal (n=11). Results indicate that if folate-rich foods are provided for them, older men would be willing and likely to eat them. However, most men and their wives lacked the knowledge of which foods to choose and why. This project was funded by the Targeted Research Initiative Program of the Oklahoma Agricultural Experiment Station.

Core Food Sources Of Folate For Oklahoma Women Of Childbearing Age

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Nutritional Sciences

The purposes of this study were to determine the amount of folate consumed by women of childbearing age in Oklahoma by three dietary assessment tools, and to determine core foods that provide folate. A convenience sample of 75 women was selected. Trained interviewers collected a multiple-pass 24-hour recall, 3-day food record (FR) and food frequency questionnaire (FFQ). One-sample t tests were conducted. Core foods were determined based on the Food Patterning Theory as defined by Koehler et al., 1989. Mean estimates of folate from FR (334±160, median 313 mcg/day) and 24-hour recall (346±233, median 299 mcg /day) met the Estimated Average Requirement (320 mcg/day) but did not meet the Recommended Dietary Allowances (400 mcg/day) for folate. Folate estimated by the FFQ met the RDA (442±247, median 358 mcg/day). Core foods (consumed > 3 times/week) did not provide enough folate in these women's diets (129 mcg/day). Bread and orange juice were the only good sources of folate in the core. The secondary core (consumed > 3 times/month) contained most good sources of folate. Other good sources such as liver and greens provided little (1-3%) folate because of their low consumption. Fortified foods provided 271±181 mcg, but not enough to meet the RDA to prevent neural tube defects (NTD). Most women are not consuming enough folate to decrease the incidence of NTD. Understanding food preferences of these women would help nutrition and health professionals to develop effective educational strategies to enhance folate intake. Funding was provided by the Oklahoma Center for the Advancement of Science and Technology.

Some Effects of Azadirachtin on the Squash Bug *Anasa tristis* (DeGeer)

Onesimus Otieno
Entomology and Plant Pathology

Neem oil and its key active ingredient azadirachtin are effective insect growth disrupters active on several agricultural pests. The oil is cold-pressed from Neem tree *Azadirachta indica* (A Juss) seeds and being bio-degradable, offers a beneficial pesticide. In this study, newly emerged adults were

injected with 5 μ l of 100ppm azadirachtin and fed on a healthy host plant, the watermelon *Citrulus linatus*. No mating was observed among adults treated shortly after emergence. No mating or oviposition was observed when both sexes were treated. Untreated females paired with treated males did not mate although oviposition occurred. Azadirachtin injections on actively mating pairs immediately inhibited mating. Reproductive potential was, therefore, affected by altered mating behavior, a possible result of physiological changes also observed in the permanently distended aedeagus of treated males.

The Use of Probit Regression to Compare Lethal Dosages of Phosphine for Various Stored Grain Pest Species and Life Stages

Claudia Wright
Statistics

Due to upcoming EPA restrictions, the use of certain insecticides for the control of pests in stored grain will be eliminated. An example of such an insecticide is ethyl bromide. Alternatives to this treatment are currently being investigated. One such alternative to ethyl bromide is hydrogen phosphide (phosphine). Of interest in this study is how effective constant exposure of phosphine is for controlling pests in stored grain over a different range of temperatures and time of exposure. Mortality of grain pests was studied with the goal to determine which species-life stage combination was most difficult to kill and to determine whether the phosphine had a significant impact on mortality as opposed to natural mortality. Four species of grain pests were studied at various life stages to give eleven species-life stage combinations total. Five of these combinations involved organisms that were too small to count prior to the administration of treatment, so the total number of organisms treated required estimation. Probit models were fit and lethal dosages (LD) required to kill 50%, 90%, and 99% of the organisms were estimated for each temperature-species-life stage combination. These LDs were compared using a technique outlined in Robertson and Preisler (1992).

Development of a Trap Based Monitoring System in Stored-Wheat

Michael Toews
Entomology and Plant Pathology

Oklahoma is ranked nationally near the top in annual wheat production with nearly 200 million bushels produced on 7 million acres. Handling and storing these vast quantities of grain throughout the year pose serious challenges. Nationally, insects are directly responsible for 10-20% of post-harvest losses to stored grain. Grain elevator operators in Oklahoma rank insects as the most significant storage problem. However, operators have no practical means of monitoring and estimating insect populations. At this time operators manage insect populations by calendar-scheduled fumigations with phosphine gas. These fumigations are expensive and may be unneeded. Additionally, constant fumigation leads to insect resistance, increased worker exposure hazards, and reduced profitability. Elevator operators could make informed decisions on when to initiate control strategies if they could estimate insect population density. The objective of this project is to develop trap-based sampling methods for use in stored wheat to estimate populations of rusty grain beetles, the most common insect in Oklahoma stored wheat. Laboratory results indicated both pitfall cone and probe style traps show a strong linear relationship between insect density and trap capture at economically important insect densities. A four-week field study determined that the probe style traps capture fewer insects and have less variability in trap capture than pitfall style traps. These developments should enable stored-grain managers to more effectively interpret and access insect population dynamics prior to invoking costly control strategies.

Factors Contributing to Type 2 Diabetes: Comparison of Diabetic and Non-diabetic African-Americans in Missouri

April Howard
Nursing

This study evaluated the demographic, socioeconomic, and psychosocial risk factors that increase the prevalence of diabetes among the African-American population. A convenience sample of 20 African-Americans diagnosed with Type 2 diabetes and 27 non-diabetics were surveyed throughout the state of Missouri. The PRECEDE phases of the PRECEDE/PROCEED model for health promotion, planning, and evaluation was used to examine the factors that contribute to the high incidence of diabetes among African-Americans. A cross-sectional design using a control group was used for the study.

The theoretical framework established by the PRECEDE model explored the relationships among (1) Predisposing factors (cultural beliefs, lack of knowledge of the disease, and health promotion behaviors), (2) Reinforcing factors (acceptance of diabetes, family/social support, health beliefs, and self-care activities), and (3) Enabling factors (financial resources and nutrition) in order to investigate adherence to prescribed medical regime, short- and long-term metabolic control (HgbA1c) and overall mental and physical health. Data was collected using face-to-face and telephonic interviews canvassing the risk factors associated with the development and management of diabetes with the use of the Diabetes Profile questionnaire.

Valid and reliable instruments used in data collection and statistical evaluation were: The Personal Resource Questionnaire (PRQ-85) (social support), Revised (IAD-R) scale (Acceptance), the Health-Promoting Lifestyle Profile II, Health Perceptions survey, Family Behavior Checklist, Cultural-Assessment Survey, and Diabetes Knowledge Questionnaire. Results showed that a majority of the diabetics surveyed were overweight, had attained a high school education or less, had lower income, decreased health and nutrition knowledge, and did not adhere to a diabetic diet in comparison to the control group. Medical complications reported as a result of diabetes diagnosis included hypertension, arthritis, vision & foot problems, and depression among diabetic respondents. Statistical analysis (T-Tests) using the SPSSx statistical package indicated no significant difference between the two groups on a majority of the variables assessed. Results from this study have implications for improving diagnosis, early detection, prevention, and utilization of education programs for diabetes.

Biotypic And Genotypic Variation Of Greenbug Populations Collected From Non-Cultivated Grass Hosts: A Local Population Study.

James Anstead
Entomology and Plant Pathology

A local population study of greenbugs on non-cultivated hosts was undertaken in Hays Kansas. Collected greenbugs were biotyped on standard plant differentials and a phylogenetic analysis was performed using a 1.4kb fragment of the mitochondrial COI gene. The study showed that greenbugs were able to overwinter on non-cultivated hosts and move back into cultivated wheat in the autumn. Greenbugs only used a subset of the non-cultivated grasses present, despite the fact that all were listed as greenbug hosts. The greenbugs present were almost all very closely related (based on mtDNA sequences). Biotype I was found to contain multiple haplotypes indicating exchange of nuclear genes that condition virulence between greenbug populations. This also indicates that biotypic status is not an indicator of evolutionary origin.

A Codominant Marker Found to Detect Hybridization between Shortleaf Pine and Loblolly Pine

Jiawang Chen

Forestry

Our goal is to identify codominant markers to distinguish shortleaf pine, loblolly pine and their hybrids. We studied nine trees of interspecific controlled crosses with shortleaf pine as seed parent and loblolly pine as pollen parent. Utilizing the PCR-RFLP technique, one codominant marker was generated by the MSPI restriction digestion of the amplified internal transcribed spacer1 (ITS1) of the nuclear ribosomal DNA. This codominant marker should now facilitate the study of the genetic introgression between shortleaf pine and loblolly pine.

Influence of Previously Grazed Winter Wheat or Native Range on Nutrient Digestion by Growing Bovine Being Adapted to a 90% Concentrate Diet

William Choat

Animal Science

Eight ruminally cannulated steers which had previously grazed winter wheat (WW; n = 4; initial BW = 407 ± 12 kg) or dormant native range (NR; n = 4; initial BW = 293 ± 23 kg) were used to determine intake, digesta kinetics, and total tract digestion while being adapted to 90% concentrate diet. The adaptation consisted of four steps using 5 diets of 70, 75, 80, 85, and 90% concentrate, respectively. Steers were fed each diet for 5 d until adapted to the 90% concentrate diet. Chromic oxide (15g/d) was ruminally dosed (0730) via gelatin capsules as an indigestible marker of digesta flow throughout the 30-d experiment. Fecal grab samples were collected on d 7 through 10, 17 through 20, and 27 through 30. On d 5, 15, and 25, steers were dosed intraruminally at 0730 with 200mL of Co-EDTA. Ruminal fluid samples were obtained at 0, 3, 6, 9, 12, 18, and 24 h after dosing. Ruminal contents were removed, weighed, subsampled, and returned to the rumen on d 17 and 27. Throughout the adaptation period, DMI (g/kg of BW) was greater (P<.05) for steers that grazed NR compared with WW. In addition, total tract OM, starch, ADF, and N digestibilities were greater (P<.05) for steers which had grazed NR compared with WW while consuming the 75% concentrate diet. No differences in total tract digestibilities were observed (P>.10) when steers were consuming 85 or 90% concentrate. Ruminal liquid and DM fill (g/kg of BW) were numerically greater (P>.10) when steers were consuming 80% concentrate, and were greater (P<.05) when steers were consuming 90% concentrate for steers grazed on NR vs WW. Fluid passage rate generally did not differ among treatments. In addition to greater ruminal volume, improved total tract digestibility of nutrients might result in a compensatory growth response by steers previously grazed on low-quality compared with high-quality forage.

Effects of Corn and (or) Soybean Meal on Nitrogen and Phosphorus Excretion, and on Volatile Organic Compound Concentration in the Fresh Slurry of Growing Pigs.

Brandon Senne

Animal Science

Six groups of four littermate barrows (29.4 kg BW) were used to determine N and P excretion of pigs fed corn, SBM, or a combination of corn and SBM. Treatments were: (1) fortified cornstarch-casein (control; 2.22%N, .33% P), (2) corn-casein (2.74% N, .40% P), (3) cornstarch-SBM (3.24% N, .49% P), and (4) corn-SBM (3.49% N, .67% P). All diets were formulated to .82% digestible lysine and .31% available P. Crystalline Lys, Thr, Met, and Trp were added to provide an ideal ratio to lysine in Diet 1. A constant ratio of Ca:available P (1.9:1) was maintained across treatments. Diets were fed for 5 d to allow for total collection of urine and feces followed by a 2 d period of fresh slurry collection. Daily N

and P intakes were, respectively: 26.9, 38.2, 39.9, 46.8 g and 4.1, 5.6, 6.1, and 9.1 g. Daily DM excretion (12, 94, 49, and 140 g) was lowest ($P < .01$) for pigs fed the control diet followed by those fed SBM, corn, and corn-SBM. Fecal N, urinary N, and total N excretion for the 4 diets were, respectively: .33, 3.04, 2.55, and 5.90 g/d; 1.22, 2.72, 4.54, and 7.36 g/d; and 1.55, 5.88, 7.26, and 13.26 g/d. Nitrogen absorption (% of intake) was greater ($P < .01$) for pigs fed the control diet; no differences existed between the corn and SBM diets; however, pigs fed corn-SBM had the lowest ($P < .01$) N absorption. Nitrogen retention (% of intake) followed the same trend. Fecal P, urinary P, and total P excretion for the 4 diets were, respectively, .29, 1.73, 1.70, and 3.22 g/d; .22, .12, .32, and .34 g/d; and .59, 1.90, 2.10, and 3.56 g/d. Phosphorus absorption (% of intake) was highest ($P < .01$) for pigs fed the control diet; no differences existed between corn and SBM, but pigs fed the corn-SBM diet had the lowest ($P < .04$) P absorption. Phosphorus retention (% of intake) was highest ($P < .01$) for pigs fed the control diet, and there were no differences among pigs fed corn, SBM, or corn-SBM. Volatile organic acid, alcohol, and phenol concentrations in slurry were similar for pigs fed the control and SBM diets. Total alcohol and phenol concentrations were greater ($P < .05$) for pigs fed corn compared with pigs fed SBM or corn-SBM. Total organic acid content was not different among treatments. These results suggest that corn contributes more to DM excretion than SBM. However, in a typical corn-SBM diet for growing pigs, the amount of N and P excretion attributed to corn or SBM is similar. Furthermore, volatile organic compound concentration was similar for pigs fed either SBM or the control diet formulated to minimize nutrient excretion.

The Relationship Between Nutrient Intake, Demographic Variables and the Formation of Pressure Ulcers in Southeastern Oklahoma Long Term Care Facility Residents.

Phyllis Nichols

NCSI

Objective. To investigate factors related to the formation of pressure ulcers in long term care facility residents.

Design. A retrospective medical record review.

Subjects/Setting. Information was gathered from medical records of residents who were admitted without pressure ulcers to two long term care facilities in Southeastern Oklahoma and who were hospitalized between January 1, 1997 and August 31, 1999. Residents who did not return to the facility following hospitalization were excluded.

Results. The 63 female and 20 male subjects in this study ranged in age from 66 to 101 years and were grouped by pressure ulcer development during hospitalization. Demographic factors that were significantly associated with developing one or more pressure ulcers during hospitalization were level of activity, mobility or the ability to turn oneself in bed, diastolic blood pressure, weight loss during hospitalization and needing assistance with eating. Correlations were observed between method of feeding and bladder or bowel continence and between method of feeding and pressure ulcer development.

On admission, the mean weight of all subjects was 140 lb. Those who developed Stage II pressure ulcers during hospitalization lost 7.4 ± 1.8 pounds and those who did not lost 1.6 ± 1.2 pounds ($p < 0.05$). During the period of this study, 24 pressure ulcers were formed, 13 Stage I and 11 Stage II.

The most frequent diagnosis observed was cardiovascular disease but urinary tract infection was the only diagnosis that was significantly associated with pressure ulcer development. Subjects taking anti-ulcer medication developed a significant number of pressure ulcers. Hematocrit, albumin and serum osmolality were significantly different in the two groups.

Age-Related Expression of Cortical Nicotinic Autoreceptor Function: Partial Characterization and Evaluation of Sensitivity to Organophosphorus Pesticides

Yi-Jun Wu

Anatomy, Pathology and Pharmacology

Nicotinic autoreceptors enhance acetylcholine (ACh) release in the adult central nervous system. We studied the expression of nicotinic autoreceptor function (NAF) in rat cortex from neonatal, juvenile, adult and aged rats. NAF was defined by the difference in the area under the curve (AUC) for [3H]ACh release in cortical synaptosomes stimulated in the presence of atropine (ATR, 100 nM) with buffer containing potassium (9 mM) with or without exogenous ACh (0.01 mM). NAF increased in an age-related manner to adulthood (AUC: 7-day, 6.9 ± 6.0 ; 21-day, 44.4 ± 5.5 ; 90-day, 196.3 ± 37.0 ; 24-month, 172.9 ± 51.5). The effects of ATR, epibatidine (EPI), nicotine (NIC), and mecamylamine (MEC) on NAF were studied. When ATR was omitted from the superfusion buffer, exogenous ACh did not stimulate further release. EPI and NIC, nicotinic receptor agonists (0-0.1 mM), had no effect on NAF. The nicotinic antagonist MEC (0.1 mM), however, inhibited NAF by 79%. The in vivo effect of chlorpyrifos (CPF, 280 mg/kg, sc) on NAF in aged rats was also evaluated. Ninety-six hours after treatment with CPF, cortical cholinesterase activity was inhibited about 85% but minimal signs of acute toxicity were noted. NAF was substantially reduced (91%), however. From these preliminary data, high levels of CPF appear to markedly alter this modulatory neurochemical process in aged animals. Together, these data suggest that NAF is mediated by atypical nicotinic receptors (i.e., ATR, NIC, and EPI-resistant but MEC-sensitive) in an age-dependent manner and that this neuromodulatory process may be sensitive to anticholinesterase exposures.

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Effects of Hemicell Addition to Corn-Soybean Meal Diets on Growth Performance, Carcass Traits, and Energy Balance in Growing-Finishing Pigs

Allen Pettey

Animal Science

Two experiments were conducted to evaluate the effects of Hemicell® (B-mannanase; ChemGen Corp., Gaithersburg, MD) addition to a corn-SBM diet on growth performance, carcass traits, and energy balance in growing-finishing pigs. In Exp. 1, 60 pigs (22.5 kg BW) were allotted by BW, sex, and litter to three dietary treatments (5 pens/trt of 4 pigs/pen). Diets were: 1) a fortified corn-SBM based control, 2) as 1 + soybean oil (SBO) to increase ME by 100 kcal/kg, and 3) as 1 + Hemicell® (.05%). ADG, ADFI and G:F for the 3 diets were: .843, .829, .873 kg; 2.50, 2.32, 2.48 kg; and .337, .358, .351, respectively. Hemicell® increased ($P < .02$) ADG compared with pigs fed the control or SBO diets. Soybean oil improved ($P < .06$) G:F compared with pigs fed the control diet. Also, pigs fed diets with Hemicell® had similar G:F compared with pigs fed diets with SBO. At 110 kg BW, pigs were slaughtered and carcass measurements collected. There were no differences in LMA; however, pigs fed diets with SBO or Hemicell® tended to have less 10th rib fat than pigs fed the control diet. On a fat-free basis, lean gains for the 3 diets were: .322, .327, and .340 kg/d. Pigs fed diets with Hemicell® had a higher ($P < .03$) lean gain and more ($P < .03$) carcass lean tissue than pigs fed the control or SBO diet. A second experiment was conducted to determine the metabolizable energy (ME) concentration of a diet with added Hemicell®. Five groups of 4 littermate barrows (31.3 kg BW) were allotted randomly by weight to four dietary treatments. Treatments were: 1) a corn-SBM based diet (1.10% Lys) as a control, 2 and 3) as 1 with cornstarch (CS) added to the daily ration to increase ME by 100 and 200 kcal/kg, respectively, and 4) as 1 with Hemicell® (.05%). Calculated ME concentrations of Diets 1, 2, 3, and 4 were: 3.32, 3.42, 3.52, and 3.32 Mcal/kg, respectively. Pigs were housed individually in metabolic

chambers and equally fed within litter. The total collection of feces and urine were conducted during two 5-d periods (d 3-7, d 18-22). There were no period x treatment interactions; therefore, the data were pooled across periods. ADFI and GE intake increased linearly ($P < .01$) with increasing addition of CS, but there were no differences between pigs fed the control diet and the diet with Hemicell®. Total dry matter fecal excretion, fecal energy losses, total urine excretion, and urinary energy losses were similar for the four diets; however, DE concentrations increased linearly ($P < .01$) with increasing CS addition. ME of the four diets, on a dry matter basis, were: 3.84, 3.98, 4.07, and 3.83 Mcal/kg. Addition of CS linearly increased ($P < .01$) ME concentration, but the addition of Hemicell® had no effect. Based on these two experiments, Hemicell® appears to improve feed efficiency and lean gain in growing-finishing pigs, but does not increase the ME concentration of a corn-SBM diet.

Sustainability Factors in Three Pre-Columbian Agrarian Societies of the Americas and Selected Contemporary Application

Matthew Tueth
Environmental Science

The primary purpose of this pre-historic qualitative research is to identify common factors of sustainability for three pre-Columbian agrarian societies of the Americas. A secondary purpose of the study is to identify contemporary applications of ancient factors of sustainability. Twenty sustainability factors, both environmental and cultural in origin, were identified from an extensive review of research literature on the pre-Columbian American societies targeted by this study: the Maya, the Moche, and the Mogollon. A research instrument, called the decision key, was crafted to rank each factor according to its importance to the sustainability of those ancient societies. A second research instrument, called the sustainability formula, was constructed to produce an overall sustainability score for each of the three selected societies. This procedure was performed for two distinct time periods for each society. The sustainability decision key and sustainability formula are appropriate and useful research instruments that produce a number of insightful results. The investigation of ancient cultures within a sustainability perspective is advantageous for archaeology and anthropology as well as environmental studies. The Maya, the Moche, and the Mogollon all experienced extended periods of sustainability as verified by their sustainability scores. These time spans were followed by periods lacking essential factors of sustainability with an eventual collapse and dispersal of each society, also indicated by the assigned sustainability formula scores. The author suggests that a universal ideology, a general adaptability for major change, and a socio-economic system that rewards productivity of all its citizens be recognized as three important factors of contemporary sustainability. Recommendations for further research were also outlined, specifically a continued investigation of additional ancient sustainability factors within other ancient agrarian societies both inside and outside of the Americas.

Effect of Agrado on the Health and Performance of Transport-Stressed Heifer Calves

Turk Stovall
Animal Science

Nine hundred six mixed breed heifer calves (427 lb average initial BW) were fed to determine the effect of adding Agrado, an antioxidant, to the receiving ration on rate and efficiency of gain, and response to medical treatments. Each load of cattle was blocked by weight, within each weight block cattle were assigned to one of two diets (0 or 150 ppm added Agrado) resulting in 8 pens per load. All cattle, purchased at sale barns in Oklahoma and Arkansas by order buyers, were given free choice access to a moderately high energy receiving diet (51.35 Mcal Neg/cwt). Health and performance were monitored

for 42 days following arrival. Diets were supplemented with 15 IU vitamin E/kg and either 0 or 150 mg Agrado/kg. Cattle were observed for signs of morbidity daily and frequency, duration, and extensiveness of medical treatments were recorded. Morbid heifers fed supplemental Agrado required fewer medical treatments for recovery indicating that Agrado may reduce medical cost. No effects of Agrado supplementation on rate and efficiency gain during a 42-day receiving trial were detected.

Dietary Fat and Iron Modify Immune Function

A.D. Shotton and E.A. Droke

Nutritional Sciences

The importance of determining the effect of dietary fat and iron (Fe) on immune responses is justified by previous studies indicating Fe and fat separately influence immunity. Other research indicated dietary fat can modify Fe absorption and utilization. Therefore, weanling male rats (8/group) were fed, for 8 wk, diets varying in Fe concentration, 10 (FeD), 35 (FeA), 100 (FeH)ug/g; and fat, safflower oil (SO), flaxseed oil (FO), olive oil (OO) or beef tallow (BT). Iron utilization was measured by the change in hemoglobin (Hgb)and hematocrit (Hct) from baseline. Immune function was evaluated by splenocyte proliferation and cytokine production in response to concanavalin A and endotoxin stimulation. Iron utilization was reduced ($p<0.05$) in rats fed FeD compared to rats fed FeA or FeH. The change in Hct was also reduced ($p<0.05$) with SO when compared to FO, OO or BT. Interleukin 2 production by splenocytes was greater with OO when compared to SO, FO or BT. Splenocyte proliferation was reduced ($p<0.05$) in rats fed FeD when compared to rats fed FeA or Fe H. Safflower oil tended to reduce ($p<0.05$) proliferation when compared to FO, but was not different from either OO or BT. In rats fed FeA or FeH, SO tended ($p<0.05$) to reduce proliferation when compared to FO, OO or BT. These data suggest dietary fat and Fe may modify immune function. (Supported by OCAST Health Research Grant HE98RS023 and OK Agricultural Experiment Station; Flaxseed Oil was a gift from Bioriginal Food and Sciences Corp., Canada)

AChE Inhibition and Recovery Following Acute Aldicarb Exposure

Xun Song

Anatomy, Pathology and Pharmacology

Aldicarb (ALD) is a carbamate pesticide that exerts toxicity through inhibition of acetylcholinesterase (AChE). Recovery from carbamylation of AChE generally occurs within 24 hours. The neurotoxic effects of ALD and its human risk assessment are of great concern due to its widespread use and potential exposure in children. We evaluated age-related sensitivity to ALD in neonatal (7 day-old) and adult (90 day-old) rats. Neonates were about 3 times more sensitive to the lethal effects of acute ALD exposures (MTDs: neonates=0.12 mg/kg, sc; adults=0.34 mg/kg, sc). Neonatal and adult rats ($n=6$ /group/time point) were given the respective MTDs and another set of adults was given the neonatal MTD. Animals were graded for signs of toxicity and sacrificed at 1, 2, 4, 6, 8 and 12 hours after exposure for determination of AChE in frontal cortex. Few obvious signs of toxicity were noted in neonatal animals. Muscle fasciculations early after exposure were noted in adults treated with the MTD whereas no signs were evident in adults treated with the lower dosage. Cortical AChE inhibition was maximal 1 hour after treatment and recovery was essentially complete 6-8 hours after exposure in both age groups. AChE from neonatal and adult cortex was similar in sensitivity to inhibition by both ALD ($IC_{50} \gg 4$ mM) and ALD sulfoxide ($IC_{50} \gg 200$ nM). These results suggest that inhibition of target enzyme by MTDs of ALD in both age groups appears similar but neonatal rats are more sensitive than adults to the acute toxicity of ALD.

Heteroarotinoids Promote Growth in Vitamin A-Deficient Rats

Melissa Simms-Kelley

Biochemistry and Molecular Biology

Heteroarotinoids are synthetic retinoids which have potential as anticancer agents. In this study, two Heteroarotinoids, containing either a sulfur (HS2) or a nitrogen (HN2) (patent pending) heteroatom, were evaluated for growth promoting activity in vitamin A-deficient rats. Thirty-six F-344 male rats were cycled into a synchronous vitamin A deficiency with an average weight of 224 g. Four rats per group were fed either all-*trans*-retinoic acid (*t*-RA), HS2, or HN2 at a level of 10, 100, or 200 µg/rat/day. Rats fed 10 µg/day of *t*-RA or HS2 maintained growth while rats fed HN2 had a marked decline in growth, showed signs of vitamin A deficiency and had an average weight of 215 g. At 100 µg/day, *t*-RA or HS2 fed rats had substantial weight gains with HS2 rats gaining more than *t*-RA fed animals. Rats fed HN2 reached a plateau then rapidly declined with an average final weight of 228 g. At 200 µg/day, animals fed HS2 had comparable weight gains to *t*-RA. Rats fed HN2 had weight gains that slightly increased, reached a plateau, and declined with an average weight of 235 g. These results indicate that HS2 at 10, 100, or 200 µg/day is capable of supporting growth in vitamin A-deficient rats and is comparable to the *t*-RA control. [Supported in part by NIH grant CA-73639, AICR grant 94A63, and OAFS].

Dexamethasone Alters Endocrine and Ovarian Function in Cattle S. M. A.

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Animal Science

Multiparous non-lactating Holstein cows were used to determine the effect of dexamethasone on the ovarian function and plasma hormones. Animals (BW = 664 kg; BCS = 3.4, scale 1 to 5) were randomly divided into two groups, control (C; n = 7) and treatment (T; n = 6), but managed as one group. Both groups were synchronized with 2 injections of PGF2a 11 d apart. One day after ovulation (d 0) the T cows received daily injections of dexamethasone (44 mg/kg BW; i. m.) until the first dominant follicle stopped growing or until d 12. The C group received vehicle injections. Between d 0 and 10, daily plasma concentrations of LH and cholesterol did not differ ($P > .05$) between the C and T cows. From d 7 to 10, plasma progesterone concentrations were less ($P < .05$) in T (1.63 ± 0.05 ng/ml) than in C (2.01 ± 0.05 ng/ml) cows. A treatment \times day interaction ($P < .05$) existed for insulin; T cows had greater ($P < .05$) insulin concentrations than C cows between d 2 and 9 (1.09 ± 0.052 ng/ml vs $.29 \pm 0.06$ ng/ml). Dexamethasone decreased ($P < .05$) IGF-I concentrations from d 5 to 10; IGF-I concentrations averaged 59.60 ± 4.0 ng/mL and 28.21 ± 3.7 ng/mL in the C and T cows, respectively. Between d 2 and 10, IGF-II concentrations were less ($P < .05$) in T cows (14.2 ± 0.55 ng/ml) than in C cows (21.3 ± 0.6 ng/mL). None of the IGF-BPs were affected by dexamethasone ($P > .05$). Plasma leptin concentrations did not differ ($P > .05$) between C ($7.25 \pm .39$ ng/mL) and T ($7.78 \pm .36$ ng/mL) cows. Plasma glucose concentrations were greater ($P < .05$) in T (81.9 ± 1.1 mg/dL) than in C (59.0 ± 1.2 mg/dL) between d 1 and 10. In conclusion, dexamethasone-induced decrease in luteal function may be due to decreased plasma IGF-I and -II. Although the gluconeogenic effect of dexamethasone was obvious, its effect on leptin secretion was not evident in these cows.

Changes in Follicular Fluid Steroids, Insulin-Like Growth Factor Binding Proteins (IGFBP) and IGFBP Proteolytic Activity during Equine Follicular Development.

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Animal Science

Final growth of ovulatory follicles in the mare is characterized by increased steroidogenesis and changes in IGFBP. The objective of the present study was to evaluate changes in equine follicular fluid (FF) steroid and IGFBP content as well as IGFBP proteolytic activity during follicular development. Follicular fluid was aspirated from ovaries (n=92 follicles) of 14 cyclic mares collected at a local abattoir. Mares were classified as either in the follicular phase (n=8) or luteal phase (n=6). Follicles were categorized as small (6-15 mm), medium (16-25 mm), or large (>25 mm). Follicular fluid IGFBP-3, estradiol and androstenedione levels were greater ($P < 0.05$) in large than in small or medium follicles. Estradiol and androstenedione concentrations were negatively correlated ($P < 0.01$) with IGFBP-2 but not IGFBP-3 or IGFBP-5 levels. To evaluate proteolysis of IGFBPs, FF was incubated with human 125I-labeled IGFBP-2, -3, and -5 and protein separated by 12% SDS-PAGE. Gels were exposed to X-ray film for 24 h and resulting bands scanned with a densitometer. Follicular fluid did not cause proteolysis of 125I-labeled IGFBP-2 or -3. However, 125I-labeled IGFBP-5 was cleaved ($P < 0.05$) by FF from large follicles collected during the follicular phase, but not luteal phase. Little or no proteolytic activity was detected in FF from small or medium follicles from follicular and luteal phase mares. Data indicate that a protease to IGFBP-5 exists in estrogen dominant follicles. The greater levels of IGFBP-3 and lesser levels of IGFBP-2 in estrogen dominant follicles of mares does not appear to be due to differences in proteolysis. Changes in IGFBP may alter levels of bioavailable IGFs that stimulate mitosis and steroidogenesis in developing mare follicles.

Continuing Professional Education Activities of Registered Dietitians and Dietetic Technicians, Registered.

Kimberly Williams, Kathryn S Keim, PhD, RD, LD, Nutritional Sciences, Oklahoma State University, and Christine Johnson, PhD, Bureau for Social Research, Oklahoma State University.
Nutritional Sciences

Participation in continuing professional education (CPE) by registered dietitians (RDs) and dietetic technicians, registered (DTRs) is a requirement in the maintenance of registration by the Commission on Dietetic Registration (CDR). The purpose of this study was to compare the CPE activities of RDs to those of DTRs. Having this information would aid in the development and provision of useful CPE activities for both groups of dietetic professionals. The data in this study was provided by the baseline survey evaluating CDR's Professional Development Portfolio. The baseline survey was sent to a total of 3,530 randomly selected RDs and DTRs in the United States. Questions regarding types of CPE activities attended in the past year and the likelihood of attending such activities in the future were asked. Total surveys returned numbered 1,429; 1,239 of which were completed by RDs. DTRs were more likely to attend academic or experiential/interactive type CPE activities compared to RDs ($p < .05$). RDs and DTRs did not differ in their willingness to attend CPE activities that involved more distance education and were technologically transmitted. It appears that RDs and DTRs are not as likely to engage in CPE activities that use distance education technologies. Funding for this project was provided by CDR.

The Detection of Bacterial Populations by Fluorescence

Lucinda Maddera

Microbiology and Molecular Genetics

Traditional techniques for detection of bacterial populations such as plate counting are time consuming. What is needed is a rapid detection system. Bacterial populations can be detected rapidly at a fixed wavelength while scanning the excitation wavelengths. Cultures of *Escherichia coli*, *Staphylococcus aureus*, and *Salmonella typhimurium* were grown in tryptic soy broth at 37 degrees C. The cells were centrifuged and washed, then placed in fluorimeter cuvettes. A spectrofluorimeter was used to detect autofluorescence.

Cauliflower Mosaic Virus Reverse Transcriptase Expression in Reticulocyte Lysate

Breshana Johnson

Biochemistry

The expression of a cauliflower mosaic virus (CaMV) reverse transcriptase from two recombinant plasmids in a rabbit reticulocyte lysate system was compared. This would provide the advantage of using the most suitable plasmid to determine the association of heat shock protein 90 (Hsp 90) with a CaMV reverse transcriptase. The reverse transcriptase coding sequence from the CaMV CabbS isolate was cloned into pGEM-T and pSP64T to produce the recombinant plasmids, pGTRT-14B and pBJ1, respectively. Both pGTRT-14B and pBJ1 contained the reverse transcriptase sequence in the correct orientation and in a favorable context consistent with the Kozakian consensus sequence. Under the control of the SP6 polymerase promoter, pGTRT-14B and pBJ1 were used as templates for in vitro coupled transcription/translation. Protein synthesis from pBJ1 showed 9.9% incorporation of [35S]-met with 77-fold stimulation over background compared to pGTRT-14B that showed only 0.89% incorporation of [35S]-met with 25-fold stimulation over background. This has been the first demonstration of the complete CaMV reverse transcriptase open reading frame expressed in a mammalian system. While both vectors are suitable for cloning and protein expression, these data showed pBJ1 resulted in increased protein expression and will be the most suitable plasmid to determine the association of Hsp 90 with a CaMV reverse transcriptase.

Reduced Temperature Increases Triglyceride Storage in Aphids

Zhaorigetu Jorigtoo Chen

Entomology and Plant Pathology

CPea aphids reared at 10°C have increased levels of unsaturated fatty acids (18:1, 18:2, and 18:3) which is expected from studies of cold adaptation in other insects. Cold adaptation in the pea aphid also involves a large increase in the storage of triglyceride as reflected by large increases in 12:0 and 14:0. This finding is consistent with the studies of Sutherland on the pemphigine aphid. The adaptation of the pea aphid to reduced temperature is a time dependent process that requires more than seven days to complete.

Expression of Transcripts for Alcohol Dehydrogenase, Aldehyde Dehydrogenase and Retinaldehyde Dehydrogenase in the Bovine Blastocyst Suggests In-Situ Synthesis of Retinoic Acid

Mahesh Mohan, Jerry Malayer, and Rodney Geisert
Physiological Sciences

Vitamin A (retinol) and its physiological metabolites, known collectively as retinoids, have profound effects on morphogenesis, cell growth and differentiation, and reproduction. Retinol administration has been shown to affect embryo development in several species. However, it is unclear whether these effects were the direct action of retinol on the embryo or via some indirect pathway. We hypothesized that the in-vitro produced bovine blastocyst has the enzymatic machinery to metabolize retinol, resulting in transcriptional regulation via the various nuclear retinoic acid (RARs) and retinoid X receptors (RXRs). In many tissues, retinol is oxidized to retinaldehyde by alcohol dehydrogenase IV (ADH-IV), which is then again oxidized to retinoic acid by aldehyde dehydrogenase I (ALDH-I) and retinaldehyde dehydrogenase II (RALDH-II). Blastocysts and hatched blastocysts were produced in-vitro from oocytes harvested from abattoir ovaries, then frozen in liquid nitrogen. Employing reverse-transcription polymerase chain-reaction (RT-PCR) we investigated mRNA expression for ADH-IV, RALDH-II, RAR α , RAR β , RAR γ , RXR α , RXR β , RXR γ , cytosolic retinoic acid binding protein-I (CRABP-I), and peroxisome proliferator-activated receptor gamma (PPAR γ). Total RNA was extracted from 10 pooled embryos at both stages and RT-PCR analysis was repeated twice. Transcripts for ADH-IV, RALDH-II, RAR α , RAR γ , RXR α , RXR β , RXR γ , and PPAR γ were detected in both stages. CRABP-I and RAR β mRNAs were not detected at either stage. Expression of mRNA for ADH-IV, RALDH-II, RAR α , RAR γ , RXR α , RXR β , RXR γ , and PPAR γ suggests that the bovine blastocyst is competent to synthesize retinoic acid from retinol. Retinoic acid is thus available to regulate gene expression during preimplantation development at the transcriptional level via RARs and RXRs.

Supported by the Oklahoma Agricultural Experiment Station and the Oklahoma State University College of Veterinary Medicine.

Occurrence and Distribution of Soilborne Fungal Pathogens on Watermelon in Southwestern Oklahoma

Xin Gen Zhou
Entomology and Plant Pathology

To continuously monitor the change in population structure of soilborne fungal pathogens associated with watermelon wilt in commercial production areas of Oklahoma, isolation, identification, and distribution of fungal species from diseased plants were conducted over three years (1997 through 1999). There was a total of eight soil-borne fungal species identified in 155 isolates from the diseased tissues of plant crowns, roots or radicles. These species were *Fusarium oxysporum*, *Macrophomina phaseolina*, *F. solani*, *F. acuminatum*, *F. equiseti*, *F. avenaceum*, *Pythium aphanidermatum*, *Sclerotium rolfsii*, which had, respectively, 32.3%, 27.2%, 4.5%, 1.9%, 1.3%, 0.6%, 0.6%, and 0.6% of occurrence in the total number of isolates. *Phytophthora* spp., *Monosporascus cannonballus*, or *Rhizoctonia solani* was not recovered. Both *Fusarium oxysporum* and *Macrophomina phaseolina* occurred in each of all five surveyed counties, Atoka, Jefferson, Love, Bryan, and Custer. The other species occurred in some of the counties. More than one pathogen was often present on a plant with wilt symptoms.

Education and Humanities

Are Traditional-Aged Students That Use More Reflective Judgment Less Judgmental Toward Nontraditional-aged Students?

Paul Shuler

School of Applied Health and Educational Psychology

Preliminary research has shown traditional-aged college students have very strong underlying negative attitudes toward nontraditional-aged students. The Reflective Judgment Model (RJM) determines the amount of reflection a person uses in making judgement decisions. This paper asks, "How well does the RJModel predict attitudes toward nontraditional-aged college students?" In other words, how much does the amount of reflection one uses in judgement-making affect one's attitude toward another person based on limited information, or specifically, are traditional-aged students that use more reflective judgement less judgmental toward nontraditional-aged students?

This paper suggests assessment of several hundred students (both traditional and nontraditional-aged) across multiple universities (small and large). All students are assessed for attitude (paper and pencil test)toward nontraditional-aged students and for Reflective Judgment stage. The analysis first determines if a difference exist in how traditional and nontraditional students surveyed see nontraditional students. (Assuming there is a difference) the study then performs separate analysis on traditional and nontraditional student data for the correlation of RJ stage and attitude factors. Further analysis is also performed to determine how well gender, classification, and university correlate with RJ stages and attitudes. Findings will be disclosed at the presentation.

Cultural Influences on Ratings of Behavioral and Emotional Problems, and School Adjustment for Koran, American Born-Korean, and Caucasian American Children`

Woo Sik Jung

SCEL

This study examined ratings of Korean, Korean-American, and Caucasian-American children as measured by Behavior Assessment System for Children (BASC). One hundred twenty Korean, Korean-American, and Caucasian-American children, ages 8 to 11 would be studied. Parents would complete the Parent Rating Scale (PRS) and children would complete the Self-Report of Personality (SRP)of BASC. Demographic information would be obtained through personal interview with parents and children. Ratings would be analyzed to determine differences in behavior among children of three different groups.

Fail the First Exam?? Don't Throw In the Towel!

Edward Franklin

Agricultural Education

A researcher was interested in determining the relationships between students' achievement on the first and second exams and their performance on a college AGCOM final exam. First, second and the final exam scores from 230 students enrolled in an agricultural communications course from six semesters were analyzed. The results show that achievement on first and second exams accounted for 34 percent

of the variance on the final exam. Achievement on the second exam was a better predictor of student success on the final exam. Therefore, the course schedule should be arranged to provide for two examinations before the university class withdrawal deadline.

Knowledge and Attitudes about AIDS in Elementary School Teachers

Pei-Pei Kuan

Special Education

This study is designed to survey the Tainpei City and County elementary teachers' knowledge and Attitudes about Acquired Immunodeficiency Syndrome (AIDS), and discover their knowledge and attitudes towards AIDS and AIDS education. Elementary Education Teachers are selected only from Tainpei City and County Public school teachers who attended sex education conference (N=63). The teacher survey posed 8 questions. Six of questions were open-ended and dealt with knowledge about AIDS. The last two questions are about teachers' attitudes of AIDS. The majority of teachers knew what AIDS is. 97% of respondents knew how AIDS is transmitted, and 74% knew how to be protected from AIDS. A low percentage of respondents will separate or transferred the child with AIDS. 66% of teachers will wear gloves before helping students who are bleeding. The result might not be generalized other cities within the country of Taiwan.

A Comparison of Math Achievement: Saxon vs. Non-Saxon

Allison Fahsl

Applied Health and Educational Psychology

The purpose of this study was to determine if any differences existed between the ITBS math scores of a pilot group of students using Saxon math textbooks and those not using Saxon textbooks. A pilot group of 73 students taught with Saxon math textbooks were matched with 73 non-Saxon students in the same district based on grade, gender, SES, race and complete ITBS total math scores. An ANOVA was performed on ITBS total math scores for each year from 1994-1997 to determine if any statistically significant differences existed. In addition, group means were examined to obtain information on the longitudinal effects of the Saxon math program as well as to make a cross-sectional comparison with the non-Saxon students. Results indicated no statistically significant differences existed between the Saxon and non-Saxon students. In addition, the group using the Saxon textbooks made no longitudinal gains.

American Indians Into Psychology

Jami Bartgis

Psychology

As part of the recently approved Indian Health Care Improvement Act of 1992, Oklahoma State University has been authorized by the U.S. Senate to provide programs that facilitate recruitment and training of American Indian students for careers in psychology. This summer program is a joint effort between the Clinical, Counseling, and School Psychology Training Programs at Oklahoma State University. With the support of the Graduate College, we hope to provide training opportunities that will encourage American Indian students to pursue careers in psychology and provide training opportunities that will encourage American Indian students to pursue careers in psychology and provide

mental health services to under-served American Indian communities. Oklahoma State University has a long history of successful services to under-served American Indian communities.

Oklahoma State University has a long history of successful service to the American Indian people in our state. We have awarded more doctorates in psychology, science, and engineering to American Indian students than any other university in the United States. A National Science Foundation study ranked the Psychology Department second nationally as the baccalaureate source institution of Indian psychology graduates between 1991 and 1995. The Counseling Psychology program in the School of Applied Health and Educational Psychology currently has ten Ph.D. students who are American Indian, 25% of the enrollment. Both the Clinical Psychology and Counseling Psychology training programs are accredited by the American Psychological Association. This summer program will make maximum effort to involve American Indian people in its delivery. The project director, Dr. John Chaney, holds a Ph.D. in Clinical Psychology and is a member of the Creek Nation. The program is supported an Advisory Board that includes tribal representatives from around the state of Oklahoma.

Oklahoma College Students' Perceptions of Socioeconomic Conditions of Native Americans in the U.S.

Kim Riggs with Dr. Susan Sharp

Department of Sociology, University of Oklahoma, Norman OK

This study will attempt to examine Oklahoma College students' perceptions of socioeconomic conditions of Native Americans in the nation. A lot of comparative research on ethnic and racial groups neglects to include the indigenous population of America. The media, as well as scholastic studies, give little attention to Native Americans. Instead of being discussed separately, they are often generalized from other minorities. As a result of this disregard, possible ambiguity can occur leaving many unaware of Native American social conditions. It can also leave some oblivious to the fact that Native Americans are below the national average on most socioeconomic measures, and in several cases below that of other minorities. Even though Native Americans make up only 1% of the nation's population, they do however, constitute approximately 7.9% of Oklahoma's population (1). Therefore, using Oklahoma as the focal point for this project is an essential component in attempting to establish a sample of those who possess reasonable knowledge of Native American culture, and perhaps are acquainted with social conditions of Native Americans. Surveys will be administered to college students within the state. These surveys will contain questions pertaining to opinions on crime, health, poverty, and education. Responses will be restricted to ranking four racial/ethnic minorities in accordance to each question. Then they will be asked to indicate the origin of their perceptions if possible. College students will be used in order to control for educational attainment. Overall, this study will be an endeavor in acquiring information on how residents in Oklahoma perceive Native American socioeconomic conditions within the nation, and if these perceptions are a result of being elided by the media and researches.

Black Literature: Tempered by Hard Effects of the Reconstruction Period

Carolyn Borgman

English/Journalism

This study is based on the question: "Did the Reconstruction Period have much influence over the writings of African-American literature?" and includes political, social and economical background information. From this turbulent time, with the North and South fighting for what each believed to be their rights, the United States battled-killing more of their own people (600,000+) than has ever been

lost in any other war. During the Civil War (1861-1865) and the Reconstruction Period (1865-1877), the nation attempted to create a "United" States of America again. Many beautiful African-American writings, showing both the emotion and the talent of the newly emancipated blacks stemmed from this period. Some were quite polished and others a bit rough in form, but all played an important part in the birth of "African-American literature."

Black letters of correspondence, oratory, folklore, sermons, Negro spirituals, poetry, short stories and novels all share a common bond-that of an oppressed people, struggling for opportunity. Today a review of those struggles and triumphs should serve as lessons that America has learned. It is my contention that the nation as a whole, and we as individuals, should appreciate these works of yesteryear, using the lessons to teach us how to meet new cultures and ethnicity that permeate America today. African-American literature is a valuable and rich part of this country's cultural roots.

Assessment of the Understanding of the Differences between Leadership and Management among Educators of Human Science Colleges

Cihan Cobanoglu

Hospitality Administration.

The study and teaching of leadership is a major concern of scholars of the twentieth century. As indicator, 1990 version of Handbook of Leadership by Bass contains more than 7,500 references (Zorn & Violanti, 1993). Rost (1991, as cited in Zorn & Violanti, 1993) reported "a steady rise in the number of published writings on leadership in each decade of this century, with 1970s and 1980s each witnessing over a 100% increase in writings compared to the preceding decade. (p.70). Also, there are several universities that offer academic degrees in leadership studies. Majority of the programs in social sciences integrated some form of leadership education in the curriculum if not offering a special leadership class. Leadership development took place in form of extra-curricular activities in higher education. Programs either developed extra curricular activities or helped students develop.

The problem this study addresses was that the differences between leadership and management are not easily distinguished. The purpose of this study was to assess the understanding of the differences between leadership and management among Human Sciences educators. The hypothesis this study attempts to answer is: H_0 = Human Sciences educators do not know the differences between leadership and management H_1 = Human Sciences educators know the differences between leadership and management. The population used in this study was all educators in Human Sciences Colleges in the United States that are members of Association of Administrators of Human Sciences (AAHS). This study has employed an on-line questionnaire. Twenty-one college schools were selected from the directory of AAHS. Of the 300 questionnaires e-mailed out to lodging properties, 75 usable questionnaires were returned, for a 25.0 % response rate. The findings of this study have shown that human science educators do know the difference between leadership and management. The skills were initially coded as leadership or management skills. Only nine out of the thirty skills were non-significant indicating that they were equally important for both leadership and management. In addition, the paired t-test for grand means of leadership and management skills indicated that the means for leadership and management skills were statistically different from each other and we reject null hypothesis and conclude that human science educators do know the difference between leadership and management (Leadership: $t=4.787$; $df=15$; $P=.000$; Management: ($t=-6.973$; $df=12$; $P=.000$; $\alpha=.05$).

On The Bus: An Ethnographic Study of School Bus Culture`

Laura Jewett

CIED

Each day 22.5 million children make the round-trip journey between school and home via the familiar yellow school bus (DeBruyn, 1985). School bus transportation is the largest mass transit system in our country and is considered the safest method of transport to and from school (DeBruyn, 1985; Fowler, 1997). Though often considered a "component part of going to school (Fox, 1996, p. 25)," or referred to as an "extension of the classroom" (DeBruyn, 1985), very little scholarly attention has been paid to the actual experience of riding the bus. Obscured-perhaps by what Gary Fine (1988) describes as the "patina of the mundane"-knowledge regarding the lived experience of this daily commute amounts to a near vacant lot (p. 76).

"We know almost nothing," writes Adler (1998) in her investigation into preadolescent culture and identity, "about the inside of child institutions and child groups"(p. 4). This year-long ethnographic study of school bus culture has been an attempt to learn more about the multiplicities of kid's experiences in this risky liminal space where the private and public lives of children intersect and sometimes crash.

Beginning with "broad sweep" observation on fifteen different busses and subsequently narrowing the scope to concentrate on the experience of a single bus, this study used qualitative methods of participant observation, informal interviews and document analysis to explore the following questions (Glesne, 1999, p.49). What is it like to ride the bus? Is it "empty time" as Fox's 1996 study suggests, or, as a few articles assert, can it be seen as an educational tool or a classroom of sorts? (DeBruyn, 1985; Saks, 1991; Vail, 1997). If the bus can be conceptualized as an educational space, how do riders make meaning out of the "multiplicity of scattered practices" which constitute this mobile culture-positioned as it is on the outskirts between school and home? (Lather, 1991, p. 43). More broadly, how might an exploration of this culture help us to better understand the "concretely historical, and open-ended" context of children's experiences on the school bus, particularly as it intersects with education? (Thorne, 1994, p. 3).

Multicultural Awareness In Large Church Adult Education Programs"

Jerry Jones

Human Resources/Adult Education

Determining the current state of multicultural awareness in regard to ethnic minority students engaged in learning across cultures in large church adult education programs was investigated. This was done through an extensive survey of the literature, plus a field survey of church adult education programs in the Tulsa, Oklahoma area across major denominational lines.

The church educational program administrators of several Tulsa area churches across major denominational lines were interviewed. Also, a questionnaire regarding the learning environment encountered in church training/educational programs was administered to a small sample of foreign students across major racial/ethnic groups.

Results indicated that large churches lagged somewhat behind the private sector and public educational institutions in promoting effective cross cultural learning. This might have been due to the large churches still emphasizing evangelism, while still going about consolidation of their education programs. It was also found that some area private vocational education schools had more multicultural awareness among instructors and staff than the local churches, perhaps because of the economic incentive and business experience over longer periods of time. In addition, the older more established

churches which answered to a higher headquarters seemed to have multicultural awareness more incorporated into their curriculums.

Other social, educational, and economic impacts and ramifications were discussed. Ways for improvement were suggested, and areas of further research were recommended.

An Examination of Technology User Acceptance Models for Mixed-Level Components"

Jennifer Peacock & Susan Stansberry, Oklahoma State University, College of Education

The purpose of this study was to examine nine technology user acceptance models in search of genuine, multi-level technology user acceptance models. Since levels issues are inherent in the study of organizations, this study specifically identified the levels (i.e., individual, group, and organization) that were explicated in the models. Because multi-level theories explain the interaction of variables across the levels, they can be useful in creating models of the complex organizational phenomena. For example, a scholarly understanding of how technology implementation at the organization level affects technology use at the individual level requires that the technology constructs at each level be defined and that the links between the levels be specified. The researchers used Rousseau's (1985) typology of mixed-level models as the framework for examining the nine technology user acceptance models.

A Quest for the Perfect Book: What Students are Looking For and Why Teachers Need to Know

Tracy Fredman

Education

Educators need to stay focused on developing the reading interests of young adults. To achieve this, we must continue to research students' choices in books by using action research. An attempt to discover which physical book features attract junior and senior students and to explore which genre these students prefer reading and why has been made using a survey with open and closed ended questions. The study involved 116 high school juniors and seniors, 60 males and 56 females. The findings show that most students first look at the title of a book to begin the selection process and then read the synopsis to decide if the book is worth pursuing. From these same students, females picked mystery then romance as their top two genre choices while the males chose science fiction then mystery. Other factors given in the open ended questions which influenced choice are also discussed, such as past reading habits, tv shows, parents, teachers, and friends.

The School Psychologist's Role in Examining Students' Perceptions of Sexual Orientation

Michael K. Cruce, Kurt T. Choate, Linda K. Palmer and Sunny R. Conner

School of Applied Health and Educational Psychology

Recent school psychology literature has cited that adolescents have poor factual knowledge of information relating to sexual orientation. The National Association of School Psychologists, along with several other prominent national organizations, has issued a formal statement dispelling the popular myth of homosexuality as a form of psychopathology. These organizations have communicated an official position that does not endorse the use of Reparative Therapy, a modality designed to "convert" homosexual behavior to heterosexual behavior. These combined associations report that Reparative Therapy actually has the potential to harm adolescents. A review of the related literature suggests that high school students may still hold negative views of homosexual orientation based on factors such as right-wing authoritarianism, social dominance orientation, and a variety of

prejudices. Several models have been suggested that hypothesize the manner in which individual's label social groups. These models include the affective model, the cognitive model, and the combined affective/cognitive model. The affective model posits that individuals will have bias toward groups based on how they feel emotionally toward that group. The cognitive model assumes that an individual's beliefs will bias how they will label a group. The combined affective/cognitive model states that both of these factors are of significant importance in the examination of labeling bias toward social groups. In response to the varying models of bias toward homosexuality, the chronic stress felt by students with homosexual orientation is created by the physical and verbal abuse of those who have these prejudicial beliefs. Students who identify themselves as homosexual may encounter school-related difficulties such as truancy from school, conflict with peers, and social stigmatism resulting in academic failure. These students also face the additional potential difficulties of increased substance abuse, depression, and suicide. Thus, the school psychologist serves a vital role in assisting students who are gay, lesbian and bisexual with their academic and social functioning in the school and in the surrounding community.

Bivariate Relationships between Achievement Areas: Self-concept and Test Anxiety.

Mwarumba Mwavita

SES

103 High School students attending a midwestern suburban public school volunteered to participate in this study. Bivariate relationships were explored between each of the three achievement areas (Math, Language and Science), with self-concept as well as test anxiety. Further regression analyses were conducted to determine the amount of variance in each of the three achievement areas accounted for by self-concept and test anxiety scores. Results and implications of this study are discussed.

Marketing of Hospitality Graduate Programs to International Students

Melih Madanoglu

HRAD

The purpose of this study is to investigate the recruiting characteristics of US hospitality schools at the graduate level. The study conducts a brief marketing analysis to provide different suggestions for increasing marketability of the schools to international students desiring a Master's or Doctoral Degree in Hospitality Management. The study will survey 36 Hospitality schools to determine international graduate students' perceptions of U.S. Hospitality Schools.

Predicting Achievement Scores

Robyn Moore

SES

Many factors are involved in a student's achievement in school. Some factors that can be used to predict a student's achievement are a student's gender, self-regulated learning, competency, autonomy, and test anxiety. This study uses these factors to try to predict a student's achievement, as measured by the students ACT score in four subject areas (English, Math, Reading, And Science). Participants (N=60) were juniors and seniors from across Oklahoma. Regression equations for each of the subject areas were determined using only those predictors that were found to be significant.

We Interrupt the Regularly Scheduled Program...College Students Have Taken Over

Paul Shuler

EPSY

Funded by a National Science Foundation grant, The Distinctive Manufacturing Technology (DMT) program at Oklahoma State University - Okmulgee set out to go where no program has gone before, by letting the students take over. Mr. Shuler spent the last two years working with DMT as program coordinator and curriculum editor. Using the philosophy of Barr and Tagg's 1995 Learning Paradigm article in *Change*, we let students control pace, curriculum content and direction, set rules, etc. The results of this national-acclaimed program are as expected by few professionals and very surprising to most professionals.

In the past year the presenter has advocated this student-led concept at conferences in Washington, DC, San Diego, and most recently, New Orleans.

This presentation will describe the program goals; discuss key program characteristics; present required characteristics of faculty for a student-led program; suggest what the curriculum for a student-led program should look like and the requirements for student-led learning experiences; and, outline positive and negative aspects of a student-led program.

The presenter will answer questions and would also like to hear from the attendees about creating similar programs in other locations, such as Oklahoma State University, Stillwater.

Eliminating Barriers to Learning: How Instructors Develop Confidence in Adult Mathematics Learners

Martha Parrott

CIED

Too many students of mathematics are walking out of classrooms feeling like failures, and unfortunately many of these feelings of failure and worthlessness can be traced back to the messages sent to students through negative teacher behaviors. Teachers often unknowingly perpetuate an influence that actually serves to hinder the development of student confidence. When a student experiences little to no confidence, the stage is set for math anxiety, math avoidance, and destined math failure. The purpose of this qualitative study is to offer a positive response to this barrier to learning by examining from a student perspective how teachers influence confidence when it comes to achieving in mathematics and by suggesting teacher behaviors that cultivate promising attitudes in students toward mathematics study. The conclusions demonstrate implications for other content areas as well.

The Internet: More Than Just Dancing Hamsters?

Cezanne Bomba

Education

At the beginning of the 21st Century, as the Internet revolution continues its incredible pace, all areas of society are being affected. The Internet provides users access to everything from dancing hamsters (<http://www.dancinghamsters.com>) to the Library of Congress (www.loc.gov).

There is no question as to how many people are accessing the Internet. Currently, the estimated number of users on-line is 275.54 million (NUA Surveys, p. 1, 2000). There is no question as to how many pages of information are available on-line either. As of Jan. 31, 2000, there are approximately one billion pages of indexable information on the World Wide Web (Lawrence, p. 1, 2000).

With that many people on-line and with that much information available, one might ask, "Is the world of education being affected by the Internet revolution." Then, if so, the question becomes: "Is the Internet being used as a research tool?" With these questions in mind, the focus of this in-process study is to examine the usage of Internet information in research at the university level.

More specifically, the usage of Internet information utilized within doctoral dissertations published at Oklahoma State University. The researcher will examine 1,000 dissertations in five of the OSU Colleges: Agriculture; Arts and Sciences; Education; Engineering; and Human Environmental Sciences published over a ten-year period from 1989-1998.

Emergent Literacy

Barbara Sorrels

SCEL

This presentation is a power point presentation of the review of the literature concerning emergent literacy and the implications for literacy instruction with the African American child. The first part of the presentation focuses on what we know about emergent literacy that transcends culture. The second half focuses on implications for helping African American children to become literate. Discussion centers around looking at the images that our society has of the African American child and an attempt is made to refute the myth of the "culturally deprived" and the "at risk child". I propose that we need to look at this population through the lens of giftedness and not through the lens of deficiencies. I use the metaphor of the "hospitable teacher" and offering the gift of hospitality as a way of fostering growth in African American children of the inner city.

Social Sciences

An Exploratory Study of Sports Talk Radio & The Female Listener

Shelley Brinsfield

Mass Communication

The purpose of this exploratory study was to discover the uses and gratifications of women who listen to sports talk radio. Focus groups and in-depth telephone interviews were conducted with 42 women who listen to sports talk radio stations in Oklahoma. A convenient, purposive sample of participants was identified through networking with athletic organizations and employees of Oklahoma's sports talk radio stations. Answers to focus group and in-depth interview questions were transcribed and analyzed for common themes and differences. In addition, all participants answered descriptive survey questions to compile a profile of the female sports talk radio listener in Oklahoma.

The research indicated that the women in this study were young, mobile, educated, and most worked outside the home in media, marketing or sales. Most of the women were introduced to the medium by a male, usually a husband, boyfriend, colleague, or son. Women indicated they listened for information, and so they can discuss sports with the men in their lives. Several women commented that they listen to sports talk radio to keep their husbands informed about what is going on in the sports world. There was also some indication that these women had developed parasocial relationships with hosts and callers. During the focus groups, women gossiped about hosts and callers. When asked what they liked and disliked most about sports talk radio, most of the discussion centered on the personalities of hosts and callers. Participants felt that more women might tune in to sports talk radio if the hosts discussed women's sports; however, most of these women admitted they have no interest in women's sports. This cognitive dissonance suggests that women may be contributing to the double standard that females are second-rate when it comes to athletics.

Gender Roles: A Comparative Analysis of Malaysian and U.S. Television Commercials

Suit-Heng Chong

Mass Communication

Since the 60s, many studies have been devoted to the related topics of feminism and portrayal of women in advertising. Advertising is not only a mirror that reflects the contemporary world; it also passes values to the next generation. Among all the media used in advertising, television has the most pervasive influence. The majority of studies done on gender positioning have mainly concentrated on the U.S. markets. Lately, researchers have conducted studies covering Asian countries because of the Asian potential market and growing economy. This study examines the manner in which men and women are portrayed in Malaysian television commercials and compares these portrayals to those in U.S. television commercials. Studies dealing with the portrayal of women is timely as women in Malaysia begin to play a more noticeable role in helping strengthen the economy of this country. This study will provide content analysis of U.S. prime time TV commercials in order to make an illuminating comparison between the two markets and determine important differences. By examining how women are depicted with respect to these different categories, the analysis will attempt to answer the following questions:

1. What is the content of Malaysian & U.S. prime time television commercials in terms of sex-role portrayal?
2. What gender is the main target for the prime time ads in these two countries?
3. Does the portrayal of women reflect Malaysian cultural norms?
4. What are the differences, if any, between Malaysia and the U.S. in the portrayal of gender?

For this study, 20 hours each of Malaysian and U.S. prime time television commercials will be videotaped. Two most popular Malaysian channels, RTM 1 and TV 3, were selected as analysis targets for this study. For comparison, 20 hours of U.S. commercials broadcast in fall 1998 on NBC will be analyzed. NBC was selected because it had the highest rating among U.S. viewers in prime time.

A Pilot Study: An Assessment of the Utilization of the Hospitality Research by Industry Professionals.

Cihan Cobanoglu, Dr. Pat Moreo, and Donald Wood
Hospitality Administration

As the way we do planning, marketing, product and service development changes and becomes more complex, research plays a critical role in providing needed information for decision-making (Sheldon, Liu & Gee, 1987). With the help of research, managers can better understand both short-term changes in the market and long-term trends, thus assisting business in improving and developing product and service quality, enhancing the effectiveness of operations, and increasing satisfaction for both external and internal guests.

Hospitality programs in the United States are producing extensive amounts of research every year (Eder & Umbreit, 1988). The majority of the hospitality research is problem-oriented research (or problem-solving research) that is normative driven (Taylor & Edgar, 1996).

Problem Statement Eder and Umbreit (1988) suggested that "research published may not be addressing the ongoing concerns of the industry." (p. 55). In 1976, hospitality professionals in the annual conference for the Society for the Advancement of Food Service Research identified the major issues facing the industry as energy, personnel management, industry organization and standards, and food production (Eder & Umbreit, 1988). Given this fact, a study conducted in 1984 revealed information that those concerns received little or no research attention. (Schaffer, 1984). Hospitality faculty addressed this problem as the lack of communication between researchers and industry professionals.

The purpose of this study is to determine the perceived benefits of hospitality research by the industry and the extent to which the industry professionals utilize this research in their organizations. In addition, this study is to examine current practices of university research in hospitality as it relates to industry needs. The objective of this study is to suggest a system, which would support hospitality research in universities while utilizing this research in practical applications.

Adult 4-H Volunteer's Perceptions of Volunteer Training, Certification and Screening in Oklahoma

Manuel D. Corro, James D. White, Charles B. Cox, Fred Rayfield, and Steve Walker.
Agriculture Education, Communication and 4-H Youth Development

The purpose of this study was to determine the perceptions of 4-H adult volunteers concerning volunteer training, certification, and screening in Oklahoma. A random sample of 350 adult 4-H

volunteers was selected from a finite population of 3,115 Oklahoma 4-H Volunteer Leaders. A total of 184 (52.37 %) adult volunteers responded to the study. The survey included 44 forced response items divided into three sections. Section 1 addressed volunteer characteristics, Section 2 relating to leader training issues, Section 3 considered two parts, certification and screening issues. The typical 4-H volunteer in Oklahoma was a Caucasian (91 %) female (79 %), between 31 to 40 years (41%), who had been involved as 4-H leader from one to 10 years (65 %), and held at least a baccalaureate degree (48 %). Leader respondents indicated they had been 4-H members (60.6 %) more than four years (77.3%) during their elementary and high school careers. Volunteer role and responsibilities and 4-H Project Areas were identified as the two most important training areas needed by volunteers. With regard to the volunteer certification process, the most agreement among respondents was certification should take place over an extended period of time with several opportunities for participation offered and A home-study or videotape option should be offered? to encourage volunteer participation. However, the respondents disagreed with the idea of making it the responsibility of volunteers paying the costs for screening and background checks?.

Adults' Perceptions of the Effects of Marital Conflict on Children

Heather Hernandez with Dr. Bridget Murphy-Kelsey

Department of Psychology, University of Oklahoma, Norman, OK

This study will examine adults' perceptions of how harmful marital conflict is to children. There is limited research that has investigated this area, yet there is an abundance of research pertaining to the effects marital conflict can have on children's emotional adjustment. The primary purpose of this study is to investigate whether or not adults are aware of these harmful effects. Approximately 50 male and 50 females will participate. Participants will respond to sixteen vignettes in which a child witnesses interparental conflict. The vignettes reflect four different aspects of conflict (i.e., intensity, frequency, child focused, and unresolved), which have been found to be harmful to emotional development. The age and gender of the child in the vignette varies to examine whether perceptions vary as a function of the child's age and gender as well as the adults' gender. Following each vignette, participants will rate the amount of four emotions (i.e., fear, anger, distress, and sadness)the child is likely to experience after witnessing the conflict. In addition, participants will complete a questionnaire to obtain information about personal childhood experiences to attempt to link past experiences of exposure to marital conflict with current beliefs.

Target Industry Analysis and Local Economic Development

LaDee Homm, Mike Woods, and Gerald Doeksen

Agricultural Economics

Target industry analysis is a powerful tool to aid in economic development. Communities can use the data to focus their economic development efforts and increase their chances of successful development. This study focuses on data analysis, interpretation of results and the broader context of community development.

Reconstructing the Framework: Assessing Counselor Empathy, Appreciation of Diversity, and Emotional Intelligence in Counselor Trainees.

Sara Kazanecki and Masafumi Ueda

School of Applied Health and Behavioral Psychology

Research on effective counselors has been conducted for many decades, examining such qualities as empathy and counselor attractiveness (Gelso & Fretz, 1992). For example, definitions and measurement of empathy have existed since the late 19th century (Carlozzi, 1995; Duan & Hill, 1996). However, many of these qualities have not been examined in light of the increasingly diverse social world of today. Consequently, there is a need to re-examine the framework by which counselors are trained and evaluated. Universal-diverse orientation (UDO), an attitude of appreciation and acceptance for the similarities and differences that exist among people, is one such variable that can capture a counselor's receptivity to diversity (Miville, Romans, Johnson, & Lone, 1998). Another important variable of interest is emotional intelligence, the ability to monitor and discriminate the emotions of oneself and others (Mayer & Salovey, 1990). It is the purpose of this research to examine the relationships between empathy, orientation toward universality/diversity, and emotional intelligence in counselor trainees.

The Growth of Bed and Breakfast Tourism in the Southern Plains States`

Yen-Soon Kim and Dr. Jeff Beck

Hotel and Restaurant Administration

The bed and breakfast industry has grown to be one of the fastest growing lodging segments in the United States. The bed and breakfast inns are chosen typically by travelers who are willing to have a high degree of his or her personal time. More and more bed and breakfasts are a popular business as alternative hotel or motel accommodations and have brought many changes to marketing and management along with numerous associations and referral organizations. The purpose of this study is to determine the operations of bed and breakfast Inns in four states (Oklahoma, Arkansas, Kansas, and Missouri) and to examine several topics relating to the ownership of bed and breakfast: demographic data, management, marketing, and financial operations data as well as the food service for breakfast for guests. The research will provide examples of best practices for the operation and marketing for the bed and breakfast Inns.

University Food Service Operation Strategy For Customer Preferences of Multicultural Market

Yen-Soon Kim, Richard Jacobson, and Dr. Pat Moreo

Hotel and Restaurant Administration

Customer-based operation management in foodservice, as well as other service businesses, has gained the interest of management researchers because it helps to improve the position of service businesses. The issue of customer preferences regarding food choices is recognized as a critical marketing area rendering continuous research for the last few decades. Volumes of research are available for strategic implications regarding an international market with multiple locations, however the issue dealing with multinational customers at a single location has largely been neglected. Looking ahead in this area of the marketing segment, the effects on market share targeting of multicultural customers are yet to be challenged and thoroughly researched. Topics of interest include, but are not limited to, events that increase demands for food on the go, changing dietary habits, and constantly increasing price/value expectations associated with food purchases. Recent market segment reports show promotions have increased students' awareness concerning trends in food preparation and dietary completeness. Actual

food purchasing behaviors are the result of the synergistic relationships among biological, ecological, and socio-cultural environments perceived and learned by a mix of multi-cultural students and staff.

This study proposes to determine customer acceptability of the University Food Court in terms of food and service value if it were to target a multicultural market segment at Oklahoma State University. This approach involves first, identifying the ethnic diversities existing at the food court, secondly, evaluating the differences among the groups, and lastly determining a strategy to maximize market share for the food-service provider based on the survey results. We believe that the method we propose has valuable implications for any service provider whom must consider operating strategies for a multicultural or multinational site although we focus on the distinct concept of a domestic food provider that serves a multicultural student market.

An analysis of the data may result in keener understanding of the multi-cultured market at OSU, and thus enable the provider to make more informed menu design service and marketing decisions.

KOSU-FM Audience Research

Lih-Dar Lee

Broadcasting and Journalism

This study mainly examines four aspects of the KOSU-FM contributors: demographic data, listening habits, contribution behaviors, and opinion leadership statuses. The research method is a mail survey and the population is the KOSU-FM contributors. There are 3,475 questionnaires mailed and 733 returned. The results were analyzed by the SPSS system. The findings suggest the respondents of this survey are highly educated, having an average annual household income of \$50,000-\$60,000, and having strong social involvement. Almost half of the respondents have been listening to the station for ten or more years, and spend on average one to two hours listening to the station per day. News is respondents' favorite programming category, and over seventy percent of respondents listen to the station during the on-air time periods of "Morning Edition" and "All Things Considered." Programming is the main reason for respondents to contribute to the station. The distribution findings show the respondents' opinion leadership statuses were at a normal bell curve level.

The Native American Ghost Dance

Katy Montgomery

Sociology

I will be presenting with Dr. Jean Van Delinder on the Native American Ghost Dance. Dr. Vandelinder is working on a Native American Witchcraft project that she had me research for and I became particularly interested in the Ghost Dance. My presentation will be about the Ghost Dance and how it was viewed by people.

The Pedagogical Extermination of La Raza: A Study of the Effects of Systematic Tracking on Latino Students

Salvador Murguia

Sociology

The educational system that exists in the United States becomes one of the few ways to advance one's socio-economic status. Like any institution, education has its flaws. One common practice that has

come under heavy criticism is tracking. I explore the effects of tracking on both current and former students of Latino descent at "Metro High School." Using qualitative research methods such as interviewing, observing, and issuing unstructured questionnaires, I have gathered information to support my argument that tracking policies generate negative affects on Latino students. The institution creates an initial separation by track placement, as a result stigmatization of the tracked students takes place, and ultimately a reinforcement of segregation occurs.

A Pilot Study: An Assessment of the Mobile Meals Program of Stillwater, Oklahoma and its Effect on the Perceived Well-Being of the Elderly.

James Smith

HRAD

Increasingly, the focus of agendas for long-term care initiatives is to enhance the quality of life of older adults living within the community, especially the maintenance of functional independence. The purpose of this research was to gain further insight of the Mobile Meals program and its effect on the perceived well-being of its participants. The research objectives were to: (1) identify to what extent the Mobile Meals program had been used by area participants, (2) examine the effect of the Mobile Meals program on the perceived well-being of its elderly clients, (3) examine the cultural and social themes exhibited by the Mobile Meal participants, and (4) to identify what innovations have been implemented to improve its cost effectiveness while continuing to provide a quality service and product. The personal interview was used to collect data for the research along with an adapted version of Recker and Wong's Perceived Well-Being Scale. This short and convenient instrument allowed for separate assessment of psychological and physical well-being and was applicable to the elderly. The information from the survey will be tabulated using PC File and summarized as frequencies, means, and standard deviation.

What is Native American Psychology?

Dagmar Thorpe

Graduate College

The oral presentation and accompanying paper "What is Native American Psychology?" addresses the articulation and development of this field based on Native American psychological worldview, epistemology, and treatment processes, tools, skills, and approaches.

The key issues facing Native Americans is our continuation as unique and distinct nations of people with our worldview, lands, resources, ways of life, languages, and cultures intact. Our communities are faced with many challenges to the health and vitality of our people including the impacts of forced genocide of our peoples which has resulted in poor health, loss of lands and resources, declining economies, education, and social services which has limited our ability to meet the critical needs of our communities in ways which promote our wellbeing for future generations. One aspect of the health of our communities is the psychology of the good mind and our ability to function as healthy individuals and families.

There is a growing movement within the field of psychology towards the development of methodologies and approaches to strengthening the good mind, or the field of mental health, by traditional health practitioners, mental health staff, community health and wellness programs, and in the professions in the field of psychology. This mental health movement is characterized by the development of a Native approach to Native psychological problems; and a traditional approach to

defining and assisting in the development of healthy Native minds and communities. This is different than mainstream approaches to the field of psychology which have developed out of a western European mindset.

The Impact of Technology in Lodging Properties in Turkey

Cihan Cobanoglu and Donald F. Wood

Hospitality Administration

Information technology has played an increasingly important and dominant role in every part of life, both personally and professionally. As a result, technology has become extremely important for the hospitality industry not only in the United States but also in European countries such as Turkey (Sener, 1997; Collins & Malik, 1999). In the lodging industry, product differentiation through marketing has become challenging. As product differentiation and marketing become more complicated, lodging properties have been forced to consider quality of service as a major competitive factor. Substantial benefits are associated with the use of technology in the lodging industry. The benefits include higher guest satisfaction, reduced training costs, lower ongoing support costs, higher productivity, improved employee knowledge, integration of various departments, speedier communications, and better strategic development and growth (Reid & Sandler, 1992; Hoof, Hubert, Collins, Combrink, Verbeeten, 1995; Cahill, 1997). Although increased utilization of technology may benefit the lodging property as a whole, the researchers suggested that technology does not necessarily increase hotel productivity in each department.

The purpose of this research was to assess the factors that impact the utilization of technology in lodging properties in Turkey. This study profiles the current perceptions of technology and the use of technology applications in a sample of lodging properties located in the south coast of Turkey.

Urban Renewal and the Community: An Analysis of the Impacts of Urban Renewal in the Greenwood District of Tulsa, Oklahoma

Amanda Coleman

Geography

The Tulsa Race Riot of 1921 has recently received much regional and national media attention. While the riot had disastrous consequences for residents of the Greenwood District, the African-American section of Tulsa, many people don't realize the rapid post-riot rebuilding that took place in Greenwood. In fact, this area remained a viable neighborhood into the 1950s. In the 1960s, Urban Renewal efforts began in Tulsa, and these, combined with a number of social factors, brought drastic changes to the community. The intention is to show that the advent of Urban Renewal projects, and not the oft-discussed race riot was the major turning point in the decline of the Greenwood District. This will be accomplished through the analysis of population changes in the district, as well as through the reconstruction of the area's physical landscape.

Leadership: Leaders in Environmental Design

Naz Kaya

Design Housing and Merchandising

Leadership can be defined as an art of influencing and directing people to obtain their confidence, respect, and cooperation. Leaders strive to be knowledgeable and professional for their field, as well as, inspire others by setting an example.

This study examines the defining characteristics of leadership by analyzing and applying them to the field of environmental design. First, these characteristics are reviewed from the leadership literature. Second, the qualities of leaders in the environmental design field are described and the leaders possessing these qualities are identified. Their creative abilities make a difference and provide insights. The leaders have a passion for their work in teaching, research, and service. Their research has been cited in several journal articles and numerous books. They, also, value teamwork and working with professionals from other disciplines to build network of relationships. Ten leaders were contacted, six responded to the interview questions: Irwin Altman, Gary Evans, Robert Gifford, Edward T. Hall, Jack Nasar, and Daniel Stokols.

Based on the interview responses, these six leaders have similarities and differences in their leadership characteristics. Irwin Altman, Edward T. Hall, and Daniel Stokols have a human resource leadership style in which leaders increase participation, motivation, and value teamwork. Gary Evans has a political leadership style in which leaders are good at political skills and emphasize the importance of building networks. On the other hand, Robert Gifford and Jack Nasar have a structural leadership style in which leaders emphasize on goals, roles, and analytic skills. All of these leaders are achievers and motivators.

The Impact of Store Lighting on Perceptions of Skin Appearance and Glare

Nam-Kyu Park

Design, Housing, and Merchandising

To identify differences between older and younger consumers and to understand the impact of different fluorescent lights on perceptions of skin appearance and glare, a 2x2x2 factorial design with repeated measures was used to identify the impact of color temperature (3000K, 4100K); color rendering index (75 CRI, 85 CRI); and age (20-30 years, over 65 years). Results indicate all subjects perceived their skin as healthier under the higher color temperature and perceived the 3000K/75CRI lighting condition as less glaring. There was no difference in perceptions between age groups. Designers can benefit from the insights this study when developing retail design.

So...Can We Skip Or Not????? The Relationship between Class Attendance, Class Participation, And Performance on the First Exam in Predicting Performance on Cumulative Final Exams

Heather Ranger

School of Applied Health and Educational Psychology

A researcher was interested in exploring the ability to predict final exam scores on the basis of information such as class attendance, student participation, and performance on the initial exam of the semester. Information from a sample of 46 students was analyzed. Results indicate that the combination of attendance scores, participation scores and performance on the first exam of the semester accounted for approximately 51% of the variance in the final exam. Additionally, when assessed individually, performance on the first exam was the most powerful predictor, followed by class

participation, and finally, class attendance. All predictors were statistically significant. Therefore, the importance of these variables in a student's academic success should be emphasized.

Emergent Literacy and Music

Barbara Sorrels

CEL

This poster presentation will focus on ways in which song picture books can support emergent literacy. Song picture books support emergent literacy by building on familiarity and enjoyment, providing repetition and predictability, building vocabulary and knowledge of story structures, promotes critical thinking and problem solving and fosters creative expression. Entire units of study can be built around a song picture book and an example of a "web plan" will be given. Ideas will also be presented on how to involve children in extension activities with the literature.

Leadership Qualities for Nutrition Education Professionals

Betty Wakou

Nutritional Sciences

The objectives of the study were to determine and define the leadership characteristics that are important for professionals in nutrition education leadership roles. A review of the relevant literature on leadership skills was conducted. The most common characteristics for nutrition education leaders were visionarism, good communication skills, motivation, intelligence, practical, perseverance, self-confidence, integrity, good people skills, predictable, conscientious, good sense of humor, persuasive, unselfish, and open-minded. The possession of the leadership characteristics as generated from the literature review can enhance leadership success among nutrition education professionals.

Physical Sciences

A Computer Program to Calculate Two Stage Short Run Control Chart Factors for (X, MR) and (Xbar, R) Charts

Matthew Elam

Industrial Engineering and Management

This paper describes the development and execution of a computer program that will accurately calculate first and second stage short run control chart factors for (X, MR) and (Xbar, R) charts. The software used is Mathcad 8.03 Professional with the Numerical Recipes Extension Pack. Exact equations for the probability integral of the range, the expected values of the first and second powers of the standardized range, the probability integral of the studentized range, degrees of freedom calculations, short run calculations, and conventional control chart calculations are used. Numerical routines provided by the software are also used. The program accepts any value for subgroup size, number of subgroups, alpha for the X and Xbar charts, and alpha for the MR and R charts both above the upper control limit and below the lower control limit. Tables are generated for specific values of these inputs. The tables correct and extend previous results in the literature. Comparison of the tabulated results to legitimate results in the literature validates the program.

Fundamental Principles of Quantum Computation Illustrated by the Laser-Cooled Ion Paul Trap

Allen Divall

Computer Science

Many calculations in quantum mechanics, although computable, are so complex that they suffer exponential slowdown when executed on any computer equivalent to Turing's model. In 1982 Richard Feynman suggested that computers utilizing quantum parallelism, entanglement and interference would overcome this complexity barrier. Later Feynman, David Deutsch and others proposed abstract models of quantum computers. In 1994, Richard Shor, extending work of Simon, discovered a quantum algorithm for factoring integers. At that time, quantum decoherence seemed to be an insurmountable obstacle in the design of any working quantum computer. The problems associated with decoherence have been alleviated by quantum error correction, discovered independently by Andrew Steane and Peter Shor.

Since my last talk four years ago at this symposium, several university and corporate research centers devoted to quantum computing and information have been founded. Over 1000 research papers and ten books have been published. A five bit quantum bit computer has been built which runs Shor's algorithm. Last fall at Los Alamos National Laboratory, Knill and Laflamme constructed a 7 qubit computer which runs a simpler algorithm. I will give a brief overview of this exciting field. I will also provide a hand-out which illustrates the factorization of the number 15 or maybe even 21 using Shor's algorithm.

Ionic Conductivity in Alkali-aluminosilicate Glass

Robert Ascio

Physics

The ionic conductivity measurement is presented for several series of aluminosilicate glass with varying concentrations of Europium and Sodium for a wide temperature (50-200 C) and Frequency (.5 Hz - 20KHz) ranges. The results show a variation in conductivity as the concentrations are changed. When Europium concentration is changed the activation energy increases. In the case of varying Sodium, the activation energy decreases. The glass structure is discussed to explain the seemingly contrary conductivity results of the Europium and Sodium. The AC conductivity data is also presented in the modulus formalism.

Microfabricated Holder for Spatially Constrained Beads for Use in Combinatorial Libraries Analyzed by ToFsims

Yen P. Nguyen

Biochemistry & Pre-Pharmacy

Time of Flight Secondary Ion Mass Spectrometry (TOF-SIMS) with imaging capability has been used to directly identify compounds on polystyrene beads. The focus of the project is to look for ways to spatially constrain beads and to microfabricate structures in Si <100> that can constrain a diverse set of compounds. A fine pattern photomask was made by electron beam lithography (EBL) as a first step of this project. Subsequent photolithography was used to transfer copies of the pattern onto the surfaces of silicon wafers. Processing steps involved the following steps; RIE (Reactive Ion Etching) to remove the nitride layer, acetone to remove photoresist, and KOH etching to create pattern channels through the Si forming a sieve like bread-retaining matrix, mild backside vacuum draw the beads into the channels for subsequent analysis.

Temperature Dependence of Optical Absorption for the Characterization of the Role of Defects in luminescence in Al₂O₃:C.

Jerimy C. Polf

Physics

The properties of the thermoluminescence (TL) glow peaks in Al₂O₃:C are well known, but the type of charge involved in the production of the luminescence has not been convincingly determined. The purpose of this research is to determine whether the TL peaks are produced by electron or hole recombination at the F and F⁺ center defects in the crystal. The optical absorption (OA) was measured at 205 nm (corresponding to F center absorption) and at 255 nm (corresponding to F⁺ center absorption). During these measurements, the crystal was heated from 50 oC to 700 oC and the changes in the absorption of the F and F⁺ centers at temperatures corresponding to the TL peaks were studied. From this, changes in the defect concentration were monitored and the type of charge recombination producing the luminescence was determined.

Fluorescence and Absorption Measurements of Eu³⁺ doped Alumino-Silicate Glasses

Abdur Rahman

Physics

Temperature dependent fluorescence and absorption measurements have been used to study Eu³⁺ ion doped silicate glasses as the concentrations of Eu³⁺ and Al are varied. Relative fluorescence peak intensity ratios have been measured as a function of Eu³⁺ concentration and temperature. The intensity of $^5D_0 \rightarrow ^7F_1$ transitions increases as the temperature decreases. However the spectral line intensity ratio $^5D_0 \rightarrow ^7F_2 / ^5D_0 \rightarrow ^7F_1$ is observed to be effectively independent of temperature and Eu³⁺ concentration. Additionally, Judd-Offelt parameters (Ω_2, Ω_4 and Ω_6) have been calculated from room temperature absorption data. The parameter Ω_2 is observed to decrease with increasing Al concentration indicating local change in the Eu³⁺ environment. The calculated values of Ω_6 are nearly constant for all Al concentrations.

Optically Resonant Microsphere Modes and Fiber-Optic Coupling Techniques`

Jeromy Rezac and Albert Rosenberger

Physics

Up to 95% of light transmitted by a single mode optical fiber has been coupled into a microsphere in the 1.5 micron wavelength range. The definition and basic concepts of whispering gallery modes are reviewed. An overview of microsphere fabrication and fiber tapering is given, along with the method for coupling light in and out of the microspheres. The potential uses of these microspheres currently being examined include trace gas detection, fiber-optic wavelength division demultiplexing, thin film characterization, and enhancement of nonlinear optical effects, such as bistability, in nanoparticle doped composites.

Estimating Downwelling Longwave Radiation for Input to a Land Surface Model

Venkataramana Rao Sridhar

Biosystems and Ag. Engineering

Interaction between the land and atmosphere is an important research theme that is being addressed from both hydrological and atmospheric science perspectives. Significant focus has been placed on coupling detailed models of land surface hydrology to general circulation models (GCMs) and to mesoscale weather models such as the operational Eta model of the National Center for Environmental Prediction (NCEP). NCEP's land surface model (LSM), and derivatives of it, require input information on weather, soil and vegetation for estimating soil moisture and evapotranspiration.

Downwelling longwave radiation is one of several weather variables needed to determine the radiation budget in the LSM, but it is a variable that is rarely measured. Various techniques have been developed to estimate downwelling longwave radiation for daytime conditions. This study was undertaken in order to evaluate the available techniques, to investigate possible improvements and/or simplifications to those techniques, and to incorporate nighttime as well as daytime conditions. Of the five models analyzed, one estimates downwelling longwave radiation as a function of atmospheric emittance and surface temperature only, while the other four models also include the cloud fraction as an influencing factor. Comparisons of model results to measured data in Oklahoma suggest that a relatively simple model can be used to accurately estimate downwelling longwave radiation during both daytime and nighttime periods.

The Effect of Eu³⁺ ions on Soda Magnesium Aluminosilicate Glass

Zhandos Utegulov

Physics

Using Raman and MAS NMR spectroscopies we investigated the effect of Eu³⁺ ions on the structure of soda magnesium aluminosilicate glasses of the following composition: [15Na₂O - 12MgO - 3Al₂O₃ - 70SiO₂]_(100-x) - [Eu₂O₃]_x, where x = 0 - 15 mole %. ²⁷Al MAS NMR spectra have two broad overlapping peaks indicating the presence of tetrahedrally and octahedrally coordinated Al sites; the presence of 5 - fold coordinated aluminum atoms could not be determined unequivocally. Al ions primarily occupy tetrahedral sites in these glasses. However, doping of Eu³⁺ ions into the glass causes enhancement of the amount of octahedrally coordinated Al atoms. It was found that the optimum concentration of the rare earths is 2.5 mole % in terms of balance between shielding of ²⁷Al nuclei in tetrahedral and octahedral coordination. At 15 mole % of Eu₂O₃, Al atoms were found in predominantly octahedral coordination. This observation is in agreement with the weakening of the O_{br} mode in (SiAl)₄ - member rings associated with 480 cm⁻¹ Raman band. The lack of resolution of the broad (850 - 1200) cm⁻¹ Raman band into sharper bands implies that several types of silicon tetrahedra with 1, 2, 3 or even 4 non-bridging oxygens per tetrahedron, may exist simultaneously in these glasses. Frequency downshift of this band with increasing rare - earth oxide concentration suggests that the concentration of silicon tetrahedra with a larger number of non - bridging oxygens per tetrahedron increases with increasing rare earth concentration, i. e the rare earth ions cause the formation of non - bridging oxygen ions in the structure. MAS NMR of ²⁹Si support these results. The Raman frequency of O_{br} mode in 3 - member rings (582 cm⁻¹) reflects the extent of the EDSMAS glass depolymerization. Raman bands at 655 cm⁻¹ and 340 cm⁻¹ were assigned to Al - O stretching and bending vibrations accordingly. Low frequency normal mode vibration at 200 cm⁻¹ was attributed to Eu - O vibration. Intermediate range order of the EDSMAS glass, associated with Boson peak, is strongly affected by large amount of rare - earths. Overall, Eu³⁺ ions entering the glass cause more structural disorder and depolymerization than alkali and alkaline modifiers.

Selecting t Best of Several Birnbaum - Saunders Populations Based on Scale Parameters

Desiree' Butler-McCullough

Statistics

Consider k (k > 1) independent Birnbaum - Saunders populations. A better population is defined to be the one having a larger scale parameter. The scale parameters of these fatigue life distributions correspond approximately to a typical number of cycles until failure. The problem of selecting t (0 < t < k) best of k populations is considered. A procedure based on maximum likelihood estimators for the scale parameters of these populations is proposed. In selected cases, the constants needed to implement this procedure are tabulated using Monte Carlo simulations.

Magnesium Pyruvic Acid Oxime as a Novel Precursor for Magnesium Oxide Catalyst

Allen W. Apblett, Abdulaziz Bagabas, and Elizabeth M. Holt

Chemistry

The magnesium salt of 2-oximinopropionic acid, Mg(PAO)2.5H₂O, was synthesized and characterized by infrared (IR) spectroscopy, proton and solid state carbon-13 nuclear magnetic resonance (NMR), X-ray powder diffraction (XRD), X-ray single crystal structure, and thermogravimetric analysis (TGA). According to the TGA results, this salt decomposed in a step-wise fashion to eventually yield MgO. IR spectra and XRD patterns were recorded for the product obtained at each decomposition step. Pure

magnesium oxide phase was obtained upon calcination at 900°C. The scanning electron micrograph of MgO thus prepared showed highly porous tiny crystals. The specific surface area of this oxide was measured by Brunauer, Emmett, and Teller (BET) method. A colorimetric method using chloranil and pyridine was utilized to determine the basicity and acidity of this oxide, respectively. The chemical and textural properties of the oxide were compared with those previously reported in the literature. MgO can be employed as a catalyst for the dehydrogenation and dehydration of alcohols and for the cross-coupling reaction between alcohols and aldehydes or ketones.

Aryl-Fused Nitrogen Heterocycles by a Tandem Reduction-Michael Addition Reaction

Matthew Ackerman, Richard Bunce, and Derrick Herron

Chemistry

Aryl-fused nitrogen heterocycles have been prepared by a tandem reduction-Michael addition sequence involving nitroarenes ortho-substituted by alkyl, ether and amine substituents incorporating an alpha,beta-unsaturated ester. In the reaction, the nitro group is reduced using six equivalents of iron powder in glacial acetic acid at 115 °C and the resulting aniline nitrogen undergoes conjugate addition to the pendant acrylate acceptor. The process is complete in 30 minutes, yields are high and sensitive functionality in the substrates is preserved. The reaction proceeds smoothly regardless of double bond geometry or methyl substitution on the beta position of the Michael acceptor. The products are easily purified by chromatographic methods.

Application of Molybdenum Blue as a Barrier Material

B.P Kiran and Allen Apblett

Chemistry

Reactive barriers can be highly effective for the prevention of the spread of contaminant plumes. Preliminary research has shown that molybdenum blue, $\text{Mo}_4\text{O}_{10}(\text{OH})_2$ has a remarkable ability to remove a wide variety of metal ions from aqueous solutions and therefore may be a useful barrier material. For example, in experiments performed with molybdenum blue and uranyl nitrate, it was found that molybdenum blue could absorb 122% by weight of uranium. Similar experiments of molybdenum blue carried out using lead nitrate, thorium nitrate and neodymium nitrate showed uptakes of 110%, 37% and 61.6% respectively. Experimental results indicate that Mo (V) is oxidized to Mo (VI) but no apparent change in the oxidation state of the contaminant metal is observed. A high selectivity of molybdenum blue for actinides and heavy metals as opposed to common contaminants found in natural waters was also established.

Functionalization of Silica-gel Particles with Paramagnetic Complexes for Use as Water-insoluble Magnetic Resonance Imaging (MRI) Contrast Agents.

Chase Kornegay and Isabelle Lagadic

Chemistry

Paramagnetic water-insoluble particulate compounds have been recognized of great interest for the MRI enhancement of organs such as liver or spleen and the MRI screening of the gastrointestinal tract in the detection of colorectal cancers. Herein, we report the preparation of novel water-insoluble MRI contrast agents, based on the covalent immobilization of paramagnetic complexes on silica gel particles. In this process, chelating ligands (i.e DTPA) were covalently attached to aminosilane-derivatized silica gel

particles through the formation of an amide bond between the surface amino group and one of the carboxylic groups of the ligand. Paramagnetic metal ions (Gd^{3+} , up to 7.3 %, and Fe^{3+}) were then introduced in these surface-immobilized sites under controlled pH. Structural characterization of these novel diagnostic agents as well as their efficiency as MRI signal enhancers will be presented.

Organically-Modified Magnesium Phyllosilicates as Heavy Metal Ion Adsorbents

Molly Mitchell and Isabelle Lagadic

Chemistry

Promising heavy metal adsorbents have been recently prepared by covalent grafting of chelating functionalities (thiol, amine) on silicates supports through the reaction with the surface hydroxyl groups. This grafting process and, consequently the quality of the functionalization layer is greatly affected by the population of silanol groups and the adsorbed water. In our approach, functionalized layered silicates are synthesized by direct precipitation of $MgCl_2 \cdot 6H_2O$ with organosilanes (i.e. mercaptopropyltrimethoxysilane) so that the formation of the functionalized surface does not depend upon the hydration state of the inorganic support. These organic-inorganic materials have been characterized by elemental analysis, Diffuse Reflectance FT-IR, powder XRD, ^{13}C and ^{29}Si CP-MAS NMR and thermogravimetric analysis. Their capacity and selectivity to adsorb heavy metal ions (Pb^{2+} , Hg^{2+} , Cd^{2+}) will be described and compared to the values reported for similar materials.

Characterization of High Dietary Fiber Biscuits Using Resistant Starch

Juntanee Uriyapongson

Food Science

Resistant starch (RS) which functions as high dietary fiber by escaping digestion in the small intestine had been used to produce high dietary fiber biscuits with good texture and flavor due to their small particle size and bland flavor compared to conventional fiber. The quality of biscuits was evaluated at 5 levels of RS (0, 15, 20, 25 and 30%) and 4 levels of baking water absorption, WA (75, 80, 85 and 90%) during 0, 1, 3, 5 and 8 days of storage time. Volume of biscuits was measured using rapeseed displacement. Dough characteristics and texture quality of biscuits was studied using TA-XT2 Texture Analyzer. Dough stickiness and softness increased significantly with water level. Volume and specific volume increase with 20% RS level and above. Significance of RS and WA were observed in chewiness and resilience, but other texture characteristics (adhesiveness, cohesiveness, springiness and gumminess) were similar. The storage time significantly affected most of the textural attributes for control as well as RS containing biscuits. Control biscuits had 78.3% and 74.4% acceptance for texture and flavor, respectively from 129 panelists using consumer test. The 15% RS biscuits had similar consumer acceptability compared to control (69.8 and 68.2% for texture and flavor, respectively). The highest level of RS (30%) had consumer acceptance close to 50% in texture and flavor. This study showed that RS could be used up to 30% in biscuit to obtain high dietary fiber with no loss in textural quality. However, biscuit with 15% RS had the highest acceptance by the consumer compared to higher levels.

Temperature Dependence of Laser Induced Grating Formation in Eu-doped Silicate Glasses

Xiwang Zhang

Physics

It is well reported that permanent and transient gratings can be formed in Eu^{3+} doped glasses at room temperature. However, until now, only a few studies on the temperature dependence of the LIG formation in Eu^{3+} doped glasses have been reported. According to Behrens *et al.*[1], the results in the range 160K and 370K in Eu^{3+} doped phosphate glasses showed a trend toward higher laser-induced grating signal intensity as temperature was lowered. French *et al.*[2] reported the temperature dependence of the LIG in the Eu^{3+} doped silicate glasses at temperatures from 160K to 370K. The same trend was found also. But the time at which the grating signal intensity was measured is not clear. In the FWM experiments reported, it was found that the grating would evolve as a function of time. So the time at which the scattering signal intensity was measured is important. In this presentation, the results of FWM experiments conducted below room temperature will be presented. The following is the composition of the samples: $[\text{70SiO}_2 + 15\text{Na}_2\text{O} + 12\text{MgO} + 3\text{Al}_2\text{O}_3](1-x) + x\text{Eu}_2\text{O}_3$, where $x=0.05, 0.075, 0.1, 0.15$ mol.%.